CONTENTS

PAGE

Application of Sulpholane in Udex Units. F. S. Beardmore and W. C. G. Kosters 1

Pre-Flame Reactions in the Spark Ignition Engine: The Influence of Tetraethyl Lead and Other Anti-Knocks. D. Downs, S. T. Griffiths, and R. W. Wheeler 8

Obituaries: **William Andrew** 26

Benjamin Talbott Brooks 26

Sir Alexander McColl 27

F. C. Starling 27

Productivity in the Petroleum Industry—the Sources of some of its Improvements. M. E. Hubbard . 29

Mechanism of Combustion Inhibition by Amines: Effect of Aliphatic and Aromatic Amines on the Pre-Flame and Ignition Characteristics of *n*-Hexane. K. C. Salooja 58

Iron Sulphides in Sediments and their Possible Significance in Respect to the Origin of Petroleum. W. Sugden 65

Knock Rating of Motor Gasoline. IP Methods 126/60 and 172/60T 70

Determination of Partition Coefficients by Gas Liquid Chromatography. P. E. Barker and D. I. Lloyd . 73

The Saturation History Dependence of Three-Phase Oil Relative Permeability. R. W. Snell . . . 81

Acidity of Bitumen: Modification of the IP Method for Determining Neutralization Value by Potentiometric Titration. J. H. Caro 85

Estimation of Aniline Point from Viscosity and Specific Gravity, or Viscosity and Viscosity Index. R. Hollinghurst 89

Obituary: **Eger Vaughan Murphree** 91

Stimulation of the Deep Lacq Gas Wells. Antoine Chaillous 93

Gas Processing and Production of Petrochemicals. M. Bailleul 99

Problems Involved in Laboratory Drilling Research. J. Raynal 105

The Underground Storage of Gas. Marc Perraud 114

Electric Discharges During Simulated Aircraft Fuelling. C. Bruinzeel 125

Compressibility and Thermal Expansion of Oils. P. S. Y. Chu and A. Cameron 140

A Paper Chromatographic Method for Identification and Determination of Heavy Fuel and Aged Cracked Gas Oil in Straight-Run Gas Oil. S. Bentur, M. Babitz, A. Rocker, and S. Skurnik . . . 146

The Influence of Alcohol Concentration on the Effectiveness of Protein Foams in Extinguishing Fires in Gasoline/Alcohol Mixtures. D. W. Fittes and D. D. Richardson 150

Obituary: **Kenneth Washington Gray** 153

The Precision of IP Test Methods. I. J. Smith 155

Lubricant Testing with the Foil-Bearing Machine. D. J. Grosse 168

Identification and Estimation of Water Soluble Anti-Icing Additives in Hydrocarbon Fuels by Infra-Red Spectrometry. Gilbert I. Jenkins and Mary R. Scruton 176

Report on "Non-Sparking" Hand Tools. Department of Scientific and Industrial Research and Fire Offices' Committee Joint Fire Research Organization Committee on Industrial Fires and Explosions 180

Joint IP–AFTP Meeting at Lacq, 10–14 October 1961. Reply by J. Raynal to discussion points from P. Docksey 184

Obituary: **Sir Donald Fergusson, G.C.B.** 185

Presentation of Honorary Fellowship to His Royal Highness The Duke of Edinburgh 187

CONTENTS

PAGE

The Effect of Polymeric Dispersants on Engine Sludge. I. R. H. Crail, J. S. Elliott, D. C. Pearman, and G. H. J. Simmons 189

The Effects of Engine Operating Variables on the Time of Flame Propagation in a Spark Ignition Engine. G. A. Harrow, P. L. Orman, and G. D. Toft 204

The Evidence for Association of Asphaltenes in Dilute Solutions. R. S. Winniford 215

Radiation Induced Decomposition of Hydrocarbons of Paraffinic Character at Room and Elevated Temperature. Gábor Földiák and Zoltán Paál 222

Miscible Gas Injection for Flooding an Oil Reservoir—an Experimental Study of Phase Behaviour. S. Reid 225

Annual Report for 1962 235

Fiftieth Annual General Meeting 249

Comments on " The Molecular Structure of Heavy Petroleum Components." Seymour Meyerson . . 252

Electron Microscopy of Grease Fibres Using Carbon Replicas. G. Rooney and R. J. Bird 256

Thermal Treatment of Light Residual Fuel Oils to Minimize Wax Separation Problems. R. Greatorex . 259

Comparative Evaluation of UAR Marine Belayim Crude and some Middle East Crudes. M. A. Borham, F. Abdel Ghany, and A. Mustafa 273

Factors Controlling the Orientation and Direction of Hydraulic Fractures. I. R. Dunlap 282

Fracture Orientation and Rock Stresses in the Springer and Hart Formations, Oklahoma. I. R. Dunlap . 289

Developments in Elasto-Hydrodynamic Lubrication. A. W. Crook 295

Umm Shaif Oilfield. History of Exploration and Development. S. Elder 308

Rate of Approach to Equilibrium of Distillation Columns. P. E. Barker, V. G. Jenson, and A. Rustin . 316

Changes in By-Laws 328

Modern Control and Instrumentation Techniques Applied to Refinery Operations. S. W. J. Wallis . 329

A Rapid Semi-Micro Kjeldahl Method for Nitrogen in Petroleum and its Products. W. R. Battles, W. P. Ellertson, G. D. Hoggan, H. B. Walker, and C. W. Wattenbarger 340

A Study of the Oil Component of the Athabasca Bitumen. M. L. Boyd and D. S. Montgomery . . 345

The Influence of Lead, Iron, Tin, and Copper on the Oxidation of Lubricating Oils. Part II. On the Metal Catalysed Oxidation of Oils. N. K. Chakravarty 353

Obituary: **Lt. Col. Samuel James Manson Auld** 359

The Interrelation of Fuel Quality and Petrol Engine Performance: Present Position and Future Prospects. D. Downs 361

Progress Report on Vehicle Tests to Determine the Effect on both Engine and Crankcase Oil of Extending Oil Drain Periods. J. Heritage and C. D. Brewer 371

Effect of Pellet Pore Structure on Catalyst Performance in the Hydrodesulphurization of Straight-Run Gas Oil. D. van Zoonen and C. Th. Douwes 383

Sand Consolidation with Epoxy-Resin Solutions. I. Havenaar and F. H. Meijs 392

Author Index 399

Name Index 401

Subject Index 403

AUTHOR INDEX

ABDEL GHANY, F. *See* BORHAM, M. A., 273–81
AULT, W. S., on control and instrumentation techniques, 338
——, on polymeric dispersants, 198–9, 200–1, 203

BABITZ, M. *See* BENTUR, S., 146–9
BAILLEUL, M., Gas Processing and Production of Petrochemicals, 99–104
BAIRSTOW, S., on polymeric dispersants, 202
BARKER, P. E., and LLOYD, D. I., Determination of Partition Coefficients by Gas–Liquid Chromatography, 73–80
BARKER, P. E., JENSON, V. G., and RUSTIN, A., Rate of Approach to Equilibrium of Distillation Columns, 316–27
BARRETT, J. W., on polymeric dispersants, 198
BATTLES, W. R., ELLERTSON, W. P., HOGGAN, G. D., WALKER, H. B., and WATTENBARGER, C. W., A Rapid Semi-Micro Kjeldahl Method for Nitrogen in Petroleum and its Products, 340–4
BEAN, C. E., on thermal treatment, 272
BEARDMORE, F. S., and KOSTERS, W. C. G., Application of Sulpholane in Udex Units, 1–7
BENTUR, S., BABITZ, M., ROCKER, A., and SKURNIK, S., A Paper Chromatographic Method for Identification and Determination of Heavy Feed and Aged Cracked Gas Oil in Straight-run Gas Oil, 146–9
BERRIDGE, S. A., on precision of IP test methods, 163
BEYCHOK, M. R., on gas processing, 104
——, on Sulpholane, 6
BIRD, R. J. *See* ROONEY, G., 256–8
BISKE, V., on precision of IP test methods, 166
BODDY, J. H., on thermal treatment, 268
BORHAM, M. A., ABDEL GHANY, F., and MUSTAFA, A., Comparative Evaluation of UAR Marine Belayim Crude and some Middle East Crudes, 273–81
BOYD, M. L., and MONTGOMERY, D. S., A Study of the Oil Component of the Athabasca Bitumen, 345–52
BREWER, C. D. *See* HERITAGE, J., 371–82
BRUINZEEL, C., Electric Discharges During Simulated Aircraft Fuelling, 125–39

CAMERON, A. *See* CHU, P. S. Y., 140–5
——, on elasto-hydrodynamic lubrication, 304
CARO, J. H., Acidity of Bitumen: Modification of the IP Method for Determining Neutralization Value by Potentiometric Titration, 85–8
CHAILLOUS, A., Stimulation of the Deep Lacq Gas Wells, 93–8
CHAKRAVARTY, N. K., The Influence of Lead, Iron, Tin, and Copper on the Oxidation of Lubricating Oils. Pt II. On the Metal Catalysed Oxidation of Oils, 353–8
CHALOUPY, P., on Lacq, 98
CHANDLER, G., on productivity, 54
CHRISTISON, D., on productivity, 55
CHU, P. S. Y., and CAMERON, A., Compressibility and Thermal Expansion of Oils, 140–5
CORPS, E. V., on Umm Shaif oilfield, 315
COULTER, J. L., on underground storage of gas, 123
CRAIL, I. R. H., ELLIOTT, J. S., PEARMAN, D. C., and SIMMONS, G. H. J., The Effect of Polymeric Dispersants on Engine Sludge, 189–203
CRANSTON, R. W., on precision of IP test methods, 164
CROOK, A. W., Developments in Elasto-hydrodynamic Lubrication, 295–307

DAVENPORT, T. C., on thermal treatment, 271
DAVIES, W. J., on elasto-hydrodynamic lubrication, 307
DOCKSEY, P., on laboratory drilling research, 112
DOUWES, C. Th. *See* VAN ZOONEN, D., 383–97
DOWNS, D., The Interrelation of Fuel Quality and Petrol Engine Performance: Present Position and Future Prospects, 361–70
DOWNS, D., GRIFFITHS, S. T., and WHEELER, R. W., Pre-flame Reactions in the Spark Ignition Engine: the Influence of Tetraethyl Lead and other Anti-knocks, 8–25
DUNCAN, E., on precision of IP test methods, 166
DUNLAP, I. R., Factors Controlling the Orientation and Direction of Hydraulic Fractures, 283–8
——, Fracture Orientation and Rock Stresses in the Springer and Hart Formations, Oklahoma, 289–94

EDGINGTON, P. C., on electric discharges, 138
ELDER, S., Umm Shaif Oilfield. History of Exploration and Development, 308–15
ELLERTSON, W. P. *See* BATTLES, W. R., 340–4
ELLIOTT, J. S. *See* CRAIL, I. R. H., 189–203
ENGELBERTS, W. F., on miscible gas injection, 232–4
EVANS, E. B., on precision of IP test methods, 165

FARNSWORTH, R., on productivity, 54
FERNER, R. R., on Sulpholane, 6
FIKRLE, J., on control and instrumentation techniques, 339
FITTES, D. W., and RICHARDSON, D. D., The Influence of Alcohol Concentration on the Effectiveness of Protein Foams in Extinguishing Fires in Gasoline/Alcohol Mixtures, 150–2
FÖLDIÁK, G., and PAÁL, Z., Radiation Induced Decomposition of Hydrocarbons of Paraffinic Character at Room and Elevated Temperature, 222–3
FOWLE, T. I., on elasto-hydrodynamic lubrication, 306
FREEBORN, A. S., on elasto-hydrodynamic lubrication, 307
FRENCH, K. H. V., on precision of IP test methods, 167

GOODFELLOW, A. J., on precision of IP test methods, 165
GOULD, P., on polymeric dispersants, 201, 203
GREATOREX, R., Thermal Treatment of Light Residual Feed Oils to Minimize Wax Separation Problems, 259–72
GRIFFITHS, S. T. *See* DOWNS, D., 8–25
GRIMES, M. H., on control and instrumentation techniques, 335
GROSSE, D. J., Lubricant Testing with the Foil-Bearing Machine, 168–75
GROSZEK, A. J., on polymeric dispersants, 200, 202
GUEST, G. R., on polymeric dispersants, 199–200

HACKETT, C. E. S., on thermal treatment, 272
HARROW, G. A., ORMAN, P. L., and TOFT, G. B., The Effects of Engine Operating Variables on the Time of Flame Propagation in a Spark Ignition Engine, 204–14
HAVENAAR, I., and MEIJS, F. H., Sand Consolidation with Epoxy-Resin Solutions, 392–7
HERITAGE, J., and BREWER, C. D., Progress Report on Vehicle Tests to Determine the Effect on both Engine and Crankcase Oil of Extending Oil Drain Periods, 371–82
HILL, L. A., on productivity, 54
HINGLEY, C., on elasto-hydrodynamic lubrication, 307
HOGGAN, G. D. *See* BATTLES, W. R., 340–4
HOLLINGHURST, R., Estimation of Aniline Point from Viscosity and Specific Gravity, or Viscosity and Viscosity Index, 89–90
HOLT, N. A. H., on Sulpholane, 7
HOWARTH, Mrs. V., on Umm Shaif oilfield, 315
HOWE, S., on miscible gas injection, 233–4
HUBBARD, M. E., Productivity in the Petroleum Industry—the Sources of some of its Improvements, 29–57
HUDSON, C. S., on electric discharges, 135

HUGHES, J. R., on electric discharges, 139
HUMPHRIS, C. P., on thermal treatment, 272

JARVIS, H. H., on precision of IP test methods, 164
JENKINS, G. I., and SCRUTON, M. R., Identification and Estimation of Water Soluble Anti-icing Additives in Hydrocarbon Fuels by Infra-red Spectrometry, 176–9
JENKINSON, K. J., on control and instrumentation techniques, 334
JENSON, V. G. *See* BARKER, P. E., 316–27

KEATING, J. M., on control and instrumentation techniques, 335, 337, 339
KIN, L., on precision of IP test methods, 166
KLINKENBERG, A., on electric discharges, 138
KOSTERS, W. C. G. *See* BEARDMORE, F. S., 1–7

LEE, W. J., on control and instrumentation techniques, 336
LLOYD, D. I. *See* BARKER, P. E., 73–80

MCCOLL, W. H. S., on productivity, 55
MCMAHAN, C. R., on Sulpholane, 5
MARSH, K. J., on electric discharges, 136
MASTERSON, E. C., on control and instrumentation techniques, 337
MEIJS, F. H. *See* HAVENAAR, I., 392–7
MEYERSON, S., Comments on "The Molecular Structure of Heavy Petroleum Compounds," 252–5
MISKIN, L. G., on control and instrumentation techniques, 336
MONTGOMERY, D. S. *See* BOYD, M. L., 345–52
MUSTAFA, A. *See* BORHAM, M. A., 273–81

NOLAN, H. G. B., on productivity, 56

ONION, G., on electric discharges, 137
ORMAN, P. L. *See* HARROW, G. A., 204–14

PALMER, D. J., on polymeric dispersants, 201
PARFITT, K. B., on polymeric dispersants, 202
PATEN, J. S., on polymeric dispersants, 200
PEARMAN, D. C. *See* CRAIL, I. R. H., 189–203
PEARSON, J., on productivity, 56
PERRAUD, M., The Underground Storage of Gas, 114–24
PLUMMER, D. P., on Sulpholane, 6, 7
PYNE, A., on Umm Shaif oilfield, 314

RAMPTON, H. C., on Sulpholane, 6
RAMSDEN, R. M., on Umm Shaif oilfield, 315
RAYNAL, J., Problems Involved in Laboratory Drilling Research, 105–13
REDDING, R. J., on control and instrumentation techniques, 336
REID, S., Miscible Gas Injection for Flooding an Oil Reservoir—an Experimental Study of Phase Behaviour, 225–34
RICHARDSON, D. D. *See* FITTES, D. W., 150–2
ROBERTS, D. A., on Sulpholane, 6
ROCKER, A. *See* BENTUR, S., 146–9
ROONEY, G., and BIRD, R. J., Electron Microscopy of Grease Fibres Using Carbon Replicas, 256–8
RUSTIN, A. *See* BARKER, P. E., 316–27
RYBAK, T. B. M., on control and instrumentation techniques, 336

SALOOJA, K. C., Mechanism of Combustion Inhibition by Amines: Effect of Aliphatic and Aromatic Amines on the Pre-flame and Ignition Characteristics of *n*-Hexane, 58–64
SCRUTON, M. R. *See* JENKINS, G. I., 176–9
SIMMONS, G. H. J. *See* CRAIL, I. R. H., 189–203
SKURNIK, S. *See* BENTUR, S., 146–9
SMITH, D., on thermal treatment, 271
SMITH, I. J., The Precision of IP Test Methods, 155–67
SNEL, R., on elasto-hydrodynamic lubrication, 307
SNELL, R. W., The Saturation History Dependence of Three-phase Oil Relative Permeability, 81–4
SQUIRE, E. S., on control and instrumentation techniques, 338–9
——, on miscible gas injection, 234
SUGDEN, W., Iron Sulphides in Sediments and their Possible Significance in Respect to the Origin of Petroleum, 65–9

TOFT, G. B. *See* HARROW, G. A., 204–14
TOPHAM, W. H., on control and instrumentation techniques, 335, 337–8
TRIMMER, J. G., on productivity, 54, 56
TRUSCOTT, D. N., on control and instrumentation techniques, 338

VAILE, P. E. B., on polymeric dispersants, 199
VAN KERKVOORT, W. J., on thermal treatment, 272
VAN ZOONEN, D., and DOUWES, C. Th., Effect of Pellet Pore Structure on Catalyst Performance in Hydrosulphurization of Straight-run Gas Oil, 383–91
VINCE, E. J., on Sulpholane, 7
VOETTER, H., on Sulpholane, 7

WALKER, H. B. *See* BATTLES, W. R., 340–4
WALLIS, S. W. J., Modern Control and Instrumentation Techniques Applied to Refinery Operations, 329–39
WAPLING, G. A., on control and instrumentation techniques, 339
WASHBROOK, C. C., on polymeric dispersants, 201
WATTENBARGER, C. W. *See* BATTLES, W. R., 340–4
WELLINGS, F. E., on Lacq, 97
——, on Umm Shaif oilfield, 315
WHEELER, R. W. *See* DOWNS, D., 8–25
WILDING, J. S., on thermal treatment, 268
WILLIAMS, G. M. E., on control and instrumentation techniques, 338–9
WILSON, A., on thermal treatment, 271
WINNIFORD, R. S., The Evidence for Association of Asphaltenes in Dilute Solutions, 215–21
WOOD, G. P., on polymeric dispersants, 200

NAME INDEX

Ackroyd, G. C., 271
Adlard, E. R., 78–80
Agius, P. J., 198
Aikman, A. R., 334
Allen, E. J., 69
American Bitumuls and Asphalt Co., 221
American Petroleum Institute, 180, 182
Anderson, F. R., 258
Archard, J. F., 299–300, 304
Arter, K., 198
Ashworth, A. J., 78–80
Associated Octel Co. Ltd, 24, 162

Baas Becking, L. G. M., 66, 68–9
Babitz, M., 149
Baker, W. O., 304
Ballard, E. C., 197
Banks, G. L., 358
Barber, E. M., 219, 221
Bardwell, J., 23, 25
Barker, P. E., 80
Barlow, A. J., 302, 304
Barton, D. C., 65, 69
Bawn, C. E. H., 358
Becker, W. W. 344
Beckman, E. W., 198
Beerstecher, E., 69
Bell, J. C., 307
Bennett, P. A., 198
Bentur, S., 149
Berg, C., 317, 327
Berl, E., 69
Bernstein, H., 182
Best, R. D., 204, 214
Betts, R. L., 68
Bezemer, C., 397
Bhattacharya, S. N., 146, 149
Biot, M. A., 283, 288
Birch, S. F., 255
Bird, R. J., 258
Bird, S. F., 288
Biswell, C. B., 198
Blok, H., 174, 304
Boelhouwer, C., 90
Bolland, J., 355, 358
Bondi, A., 140, 145
Borham, M., 281
Born, —, 140
Bouchard, C. L., 204, 214
Boyd, M. L., 352
Boyd, T. A., 58, 61, 64
Brace, J. R., 69
Bradley, D. E., 258
Bradstreet, R. B., 343–4
Bridgman, P. W., 141, 145
Brinton, R. K., 63–4
British Petroleum Co. Ltd, 179, 268, 314, 334
Broders, E., 214
Brodsky, A. M., 222
Brooks, B. J., 65, 68–9
Brooks, R. F., 340–1, 344
Brown, J. E., 22, 24, 62–4
Brown, J. R., 88
Brown, R. H., 255

California Research Corpn, 198
Callear, A. B., 23, 25
Cameron, A., 140, 145, 169, 174, 304
Campbell, J. M., 24–5
Cardwell, P. H., 397
Carhart, H. W., 130, 133
Carruthers, J. A., 133
Castrol Ltd, 197
Catchpole, J., 327
Caudle, B. H., 84
Chakravarty, N. K., 358
Chalk, A. J., 358
Chamberlain, G. H. N., 58, 62, 64
Cheaney, D. E., 23, 25
Choufoer, J. H., 339, 391
Chu, P. S. Y., 140, 145
Clarke, J. S., 204–5, 214
Clerc, R. J., 252, 255
Cloud, R. W., 133
Coates, H. B., 90
Collins, R. E., 288
Colyer, C. C., 198
Compagnie Française de Petroles, 314
Contractor, R. M., 319, 327
Cooke, C. F., 258
Co-ordinating Research Council, 132–3
Corey, A. T., 84
Corley, C. B., Jr, 397
Cortes, J., 258
Cottrell, T. L., 64
Coulson, E. A., 327
Cramer, P. L., 24–5
Crawford, P. B., 288
Crenshaw, J. L., 69
Critcher, D., 78, 80
Crook, A. W., 384
Crouch, R. F., 304
Cullis, C. F., 58, 63–4
Cullum, T. V., 255
Cundiff, R. H., 88
Curry, S., 204, 214

Dabin, J., 85, 88
Darling, S. M., 198
Darlington, W. H., 304
Davidson, J. F., 317, 327
Davies, D. A., 23, 25
Davis, A., 23, 25
Davis, G. H. B., 350, 352
Dawson, J. E., 358
Dawson, P. H., 303–4
Deal, C. H., 5, 80
Dean, R. A., 255
Dennison, G. H., 358
Denyer, R. L., 255
Derr, E. L., 80
de Ruiter, W. J., 397
Desty, D. H., 80
Dixon, W. J., 159, 162
Downs, D., 9, 25, 205, 214
Dowson, D., 298, 300, 304
Drake, L. C., 333, 339, 387, 391
Dray, E. E., 69
Dugger, G. L., 214
Dumee, J. A., 397
Dunham, K. C., 69
Dunlap, I. R., 294
Du Pont de Nemours, E. I., and Co., 198

Eckert, G. W., 220–1
Edwards, J. H., 397
Egerton, A. C., 24–5, 358
Eilers, H., 221
El Badri, A. K., 281
Ellis, S. R. M., 319, 327
Emery, K. O., 67, 69
Esso Research and Engineering Co., 198
Evans, E. D., 69
Everett, A. J., 25
Everett, D. H., 78–80

Fales, W. K., 198
Farrar, G. L., 334
Field, E. A., 155, 162
Fischer, K. A., 216, 220–1
Fleming, R. H., 69
Flügge, S., 133
Földiák, G., 222
Foster, M. R., 288
Fraser, C. D., 288
French, R. J., 152
Freund, M., 222
Fry, J. F., 152

Gagliardi, J. C., 198
Gair, F. C., 304
Gallifher, E. W., 66–7, 69
Gardner, R. A., 221
Garner, F. H., 327, 353, 358
Garrels, R. M., 67, 69
Gasvoda, R. F., 198
Gee, G., 355, 358
Georgi, C. W., 197–8
Gerstein, M., 214
Ghannon, F. E., 198
Gilman, H., 358
Godbey, J. K., 287–8
Golothan, D., 198
Goodier, J. N., 288
Goodspeed, F. E., 350, 352
Graab, D. D., 214
Green, —, 140
Greiner Glassblowing Laboratories, 341, 344
Griffin, R., 221
Griffiths, S. T., 25
Grim, R. E., 221
Grubb, H. M., 255
Grubin, A. N., 295–6, 304
Gruse, W. A., 68

Hanson, A. C., 90
Hanson, W. E., 350, 352
Hardy, C. J., 80
Harle, O. L., 221
Harmens, A., 327
Harmon, J. A., 397
Harrison, E., 288
Hart, H., 255
Hartmann, I., 182
Hartung, A. A., 141, 143, 145
Hazelwood, R. N., 350, 362
Headington, C. E., 149
Heck, E. J., 66–9
Heidelberg, E., 130, 133
Heinen, C. M., 198
Heiss, J. H., 304
Hendrick, J. O., 397
Hendrickson, Y. G., 221
Herzig, H. L., 169, 174
Higginson, G. R., 298, 300, 304
Hildebrand, J. H., 80
Hill, J. B., 90
Hinkamp, J. B., 214
Hirschler, A. E., 90
Hirst, W., 304
Hoare, D. E., 23, 25
Hobson, G. D., 69
Hodges, H. D., 287–8
Hofstee, T., 80
Hoggan, D., 69
Holland, W. E., 397
Hood, A., 252–5
Hoog, H., 255, 348, 391
Hosain, A., 81–2, 84
Hubbert, M. K., 286, 288, 294
Huber, N. K., 67, 69

Ingold, K. U., 58, 64
Ingraham, J. C., 133
Institute of Petroleum, 181–2
Irvine, R., 69

Jackson, R. F., 317, 327
Jain, B. D., 358
James, A. T., 73–4, 80
James, I. J., 317, 327
Jeffreys, G. V., 327
Jenkinson, —, 259, 268
Johnson, J. F., 221
Johnson, M. W., 69
Johnson, R. C., 317, 327
Johnston, J., 69
Jonach, F. L., 198
Jones, J. H., 352
Jonkers, E. W., 397
Jordan, T. E., 80
Juniper, B. E., 258
Justen, J. J., 288

Kallenbach, R., 335, 339, 387, 391
Karrer, C., Jr, 350, 362
Kerver, J. K., 397
Khan, M. A., 80
Kharasch, M. S., 358
Khokhar, B. A., 64
Kieschnick, W. F., 288
King, R. W., 350, 352
Kirk, M. T., 299–300, 304
Kleiger, S. C., 358
Klinkenberg, A., 133
Klinkert, H. G., 339, 391
Knight, J. L., 182
Knox, J. H., 13, 25
Koninklijke/Shell Exploratie en Produktie Laboratorium, 397
Krasnitz, A., 344
Krumbein, W. C., 67, 69
Kurtz, S. S., 90
Kurtz, S. S., Jr, 350–2
Kwantes, A., 80

Labout, J. W. A., 221
Lake, G. R., 340, 344
Lamb, J., 302, 304
Lawrence, A. S. C., 189, 195, 197
Lea, —, 13
Lederer, E., 149
Lederer, M., 149
Le Nobel, J. W., 339, 391
Leonhard, F., 256, 258
Leverett, M. C., 81–4
Lewicki, W., 299, 304
Lewis, B., 130, 133
Lewis, W. B., 81–4
Lewis, W. K., 327
Light, C. E., 198
Lipkin, M. R., 350–2
Lopez, G., 80
Lovell, W. G., 22, 25
Lowe, A. C., 271
Lucchesi, P. J., 222
Luttik, C., 133
Lykken, L., 85, 88
McAllister, E. W., 350, 352
McClellan, A. L., 258
McCutchan, P., 344
McGuire, W. J., 288
Machu, W., 281
Mack, C., 216, 220–1
McKee, J. W., 133
McLafferty, R. W., 255
McNab, J. G., 68
McReynolds, L. A., 198
McReynolds, P. S., 397
McSkimin, H. J., 304
Malone, G. K., 198
Mammar, H. E., 69
Manacher, G. K., 133
Mardles, E. W. G., 21–2, 25
Mariani, E., 146, 149
Markley, F. X., 62–4
Markunas, P. C., 88
Marsh, K. J., 133
Marshall, W. R., 317, 327
Martin, A. J. P., 73–4, 80
Martin, C. C., 350–2
Martin, J. A., 358
Martin, R. L., 255
Marvin, C. F., 204, 214
Mason, W. P. 304–5
Matheson, W. E., 133
Matthews, D. H., 85, 88
Mayo, F. R., 358
Meador, G. R., 344
Meder, W., 222
Meinschein, W. G., 68
Melby, A. O., 15, 25
Merritt, H. E., 303–4
Meyerson, S., 255
Midgley, T., Jr, 58, 64
Miles, T. K., 221
Miller, J. A., 198
Mills, I. W., 90
Milne, A. A., 384
Milner, O. I., 352–3
Minkoff, G. J., 25
Mitchell, J., 88
Moffitt, J. V., 198
Montgomery, D. S., 344
Moore, D., 66, 68–9
Moote, T. P., 352
Morton, R. W., 198
Mootlau, A. Y., 256, 258
Muenger, J. R., 221
Mulvey, D., 198
Munday, J. C., 133
Murphy, C. K., 198
Murray, J., 69
Musselman, J. M., 198
Mustafa, A., 281

Naar, J., 84
Nabert, —, 130, 133
Nadai, A., 288
Nash, P., 152
Neel, J. C., 344
Newhouse, W. H., 69
Newman, A. D., 304
Newman, M. M., 130, 133
New York Naval Shipyard, 180, 182
Noller, C. R., 69
Norrish, R. G. W., 13, 23, 25

Olson, A. C., 255
O'Neal, M. J., 252, 255
Oosterhoff, L. J., 24–5
Orcutt, F. K., 298, 304
Orr, W. L., 69
Osborn, R. A., 344

Palmer, K. N., 182
Parker, C. K., 198
Patel, B. J., 169, 174
Patel, S. M., 344
Patnode, H. W., 69
Penning, H. M., 339, 391
Peri, J. B., 221
Perkins, E. J., 69
Perry, J. H., 327
Peterkin, M. E., 350, 352
Pettit, C. D., 288
Pfeiffer, J. Ph., 88, 221
Philip, S. F., 133
Pidgeon, L. M., 358
Pierotti, G. J., 77, 80
Pigford, R. L., 317, 327
Pirson, S. J., 84
Pitelsky, I., 15, 19, 25
Pleet, M. P., 352
Polk, A. C., 397
Porter, P., 88
Porter, P. E., 80

Porter, R. S., 221
Postma, H., 67, 69
Potter, R. I., 198
Poulson, B. V., 133
Powell, H., 179
Pratt, W. E., 69
Prizer, C. J., 198
Protheroe, J., 23, 25
Puddington, I. E., 58, 64
Purdy, W. C., 88

Quillian, R. D., 198

Raether, H., 133
Rank Trust, Joseph, 268
Rassweiler, G. M., 205, 214
Ray, B. R., 221
Reid, S., 81–4
Reynolds, T. W., 214
Ricardo & Co. Engineers (1927) Ltd, 24
Rice, W. W., 198
Richfield Oil Corpn, 353
Rifkin, E. B., 21, 23, 25
Rimmer, C. P., 64
Ritch, H. B., 397
Rittenberg, S. C., 67, 69
Ritter, H. L., 333, 339, 387, 391
Robb, J. D., 130, 133
Robert, L., 90, 350, 352
Robertson, A., 358
Robinson, V. H., 205, 214
Rocker, A., 149
Rogers, D. T., 133, 198
Romney, J., 197
Rooney, G., 258
Rose, A., 317, 327
Ross, A., 21, 25
Ruliffson, M. D., 88
Rynders, G. W. A., 80

Sadisivan, Y., 344
Safransky, L. W., 88
Salé, B., 204–5, 214
Salooja, K. C., 64
Sandefur, J. A., 344
Sankin, A., 350, 352
Sauer, R. W., 146, 149
Schaafsma, A., 339, 391
Scheidegger, A. E., 284, 286, 288
Schenck, G. O., 222
Schön, G., 130, 133
Schonland, B. F. J., 133
Schraru, A., 216, 220–1
Schuringa, A., 133
Scott, R. L., 80
Scott, R. P. W., 80
Sears, G. W., 162
Shapiro, H., 62–4
Shell Internationale Research Maatschappij N.V., 397
Shell-Mex and BP Ltd, 268
Shirley, R. L., 344
Shor, G. L., 198
Shotter, B. A., 304
Sibley, L. B., 298, 304
Simpson, W. C., 221
Sims, C. J., 21–2, 25
Sinclair Research Inc., 198
Sinitsyn, V. V., 256, 258
Smith, B. H., 397
Smith, F. L., 24–5
Smith, J. F., 358
Smith, P. V., 68–9
Snell, R. W., 81–4
Socony Mobil Oil Co. Inc., 288, 294
Soltau, J. P., 204, 214
Soukiassian, L., 205, 214
Spain, H. H., 397
Spalding, D. B., 205, 214
Sreenivasan, A., 344
Sreenivasan, R., 344
Stang, A., 358
Staudinger, H., 219, 221
Stevens, D. R., 68
Stevens, L. C., 288
Stevens, N. P., 69
Stock, J. F., 88
Stout, W. J., 350, 352
Straetmanns, —, 259, 268
Street, J. C., 25
Streets, R. E., 198
Stross, F. H., 80
Sverdrup, H. V., 69
Szwarc, M., 63–4

Tabor, D., 295, 304
Tausch, G. H., 397
Taylor, C. F., 205, 214
Terol, H., 88
Terwilliger, P. L., 81, 84
Thaler, L., 214
Thiele, E. W., 331, 337, 339, 383–4, 390–1
Thomas, B. A. M., 162
Thomas, J. R., 221
Timoshenko, S., 288
Titman, H., 182
Tom, T. B., 198
Topchiev, A. V., 222
Townend, D. S., 334
Townend, D. T. A., 8, 25
Trask, P. D., 65, 69
Trump, J. G., 131, 133
Tuemmler, F. D., 88
Tukey, J. W., 159, 162
Twenhofel, W. H., 69

Ubbelohde, A. R., 24–5
Universal Oil Products Co., 344

van Andel, J., 67, 69
van Beem, M. J. L., 339, 391
van der Minne, J. L., 133
van Meter, R., 344
van Nes, K., 352
van Rossum, J. J., 174
van Weeren, P. A., 339, 391
van Westen, H. A., 352
Vellenga, S. J., 133
Vichnievsky, R., 204–5, 214
Villforth, F. J., 221
Vinogradov, G. V., 256, 258
Vlugter, J. C., 352
von Elbe, G., 130, 133

Waddington, D. J., 58, 61, 63–4
Wagenaar, D., 133
Waksman, S. A., 69
Waldron, J. D., 255
Wallis, S. W. J., 334
Walsh, A. D., 9, 24–5, 58, 62–4
Warren, G. W., 80
Warren, J. A., 204, 214
Waterman, H. I., 90, 350, 352
Waters, W. A., 358
Watson, H. J., 304
Weed, A. F., 149
Weetman, B., 220–1
Weissman, J., 204, 214
Welch, B. L., 160, 162
Welch, T. R., 88
Wendland, R. I., 350, 352
Wheeler, A., 331, 337, 339, 383–4, 390–1
Wheeler, R. W., 9, 25
White, D., 69
White, T. T., 340–1, 344
Whitham, B. T., 80
Whittaker, A. V., 298, 304
Wibault, J. P., 358
Wicke, E., 335, 339, 387, 391
Wieber, R., 15, 19, 25
Wigley, K. J., 133
Williams, C. C., 69
Williams, J. A., 255
Williams, K. G., 130, 133
Williams, T. J., 317, 327
Willis, D. G., 286, 288, 294
Willis, R. L., 197
Wilson, B. S., 353, 358
Winter, E. F., 133
Winters, J. C., 255
Witherspoon, P. A., 218, 221
Withrow, L., 205, 214
Wolf, S., 86, 88
Woods, F. J., 130, 133
Wright, P. G., 24–5
Wrightsman, C. C., 397
Wygal, R. J., 84

Yakubik, M. G., 88
Yamada, T. J., 358
Young, A. J., 327
Young, G. C., 182

Zahner, R. J., 343–4
Zaslavsky, Yu. S., 198
ZoBell, C. E., 66, 69
Zuiderweg, F. J., 327

SUBJECT INDEX

Abu Dhabi, Umm Shaif oilfield, 308–15
Aircraft fuelling, electric discharges during, 125–39
Aluminium Laboratories lubricant tester, 169–70
Alkylbenzenes, molecular structure, 252–5
Amines, combustion inhibition, 58–64
Aniline point, estimation, 89–90
Aromatics, extraction by sulpholane process, 1–7
Asphalt:
  Californian, properties, 216
  Venezuelan, properties, 216
Asphaltenes:
  association in dilute solutions, 215–21
  Californian asphalt, properties, 216, 219
  molecular weights, 215–21
  Venezuela asphalt, properties, 216, 219–21
Athabasca bitumen, oil component, 345–52

Benzene, flame propagation time, 204–14
Blok and van Rossum lubricant tester, 169
Bitumen:
  acidity test, 85–8
  Athabasca, oil component, 345–52

Catalysts, pellet, pore structure effect in hydrodesulphurization, 383–91
Cellosolve, determination in kerosine, 176–9
Chromatography, determination of partition coefficients, 73–80
Combustion:
  inhibition by amines, 58–64
  pre-flame reactions, anti-knocks effect, 8–25
Compressibility of oil, relation to thermal expansion, 140–5
Combustion, pre-flame reactions, *n*-Hexane, 58–64
Copper, influence on oxidation of lubricating oil, 353–8
Crude oil:
  Kirkuk, 274–9
  Marine Belayim, Egypt, 273–81
  Ras Tanura, 274–9

Di-*iso*butylene, flame propagation time, 204–14
Distillation column, equilibrium approach rate, 316–27
Distribution of oil, productivity improvements, 43–7
Drilling, research in, 105–13, 184

Egypt, Marine Belayim crude oil, 273–81
Electric discharge, aircraft refuelling, 125–39
" Eposand " sand consolidation, 392–7
Engines, spark-ignition:
  charge stratification, 366
  combustion chamber design, 364
  compression ratio trends, 361
  flame propagation, 204–14
  oil drain periods, extension effect, 371–82
Engines, spark-ignition (*contd.*):
  performance and fuel quality, 361–70
  turbocharging, 369
  variable CR piston, 363
Expansion of oils, thermal, compressibility and, 140–5
Exploration for oil, productivity improvements, 31–3

Fires, gasoline–alcohol mixes, foam effectiveness, 150–2
Flame propagation, effect of variables on time of in engine, 204–14
Fuel oil, residual:
  chilling effect, 262–8
  sludge analyses, 259
  thermal treatment, 259–72
  wax separation, 259–72

Gas oil:
  coloured, determination of colour material, 146–9
  hydrodesulphurization, catalyst pore structure effect, 383–91
Gasoline:
  anti-icing additives determination, 176–9
  knock-rating test modification, 70–1
  octane number trends, 361
  quality, relation to engine performance, 361–70
Gasoline–alcohol mixtures, fires in, foam effectiveness, 150–2
Geophysical surveys, seismic costs per mile, 31
Grease, electron microscopy, carbon replicas, 256–8

Herzig lubricant tester, 169
*n*Hexane, pre-flame reactions, 58–64
Hexylene glycol, determination in gasoline, 176–9
Hydrocarbons:
  decomposition, radiation induced, 222–3
  heavy, molecular structure, 252–5
Hydrodesulphurization, catalyst pore structure effect, 383–91

Institute:
  annual general meeting, 249–51
  annual report 1962, 235–48
  By-laws changes, 328
  Honorary Fellowship presentation to Duke of Edinburgh, 187–8
Iraq, Kirkuk crude oil, 274–9
Iron, influence on oxidation of lubricating oil, 353–8

Kerosine, anti-icing additives, determination, 176–9
Kjeldahl method of nitrogen determination, semi-micro, 340–4
Knock-rating test, modification, 70–1

Lacq:
  gas well stimulation, 93–8
  natural gas:
    composition, 99
Lacq (*contd.*):
    petroleum chemicals from, 99–104
    storage underground, 114–24
Lead, influence on oxidation of lubricating oil, 353–8
Lubrication, elasto-hydromatic, 295–307
Lubricants:
  crankcase, drain period effect, 371–82
  dispersants effect on sludge, 189–203
  Lauson cold sludge test, 190–4
  oven cold sludge test, 195–6
  oxidation, metal catalysed, 353–8
  testing in foil-bearing machine, 168–75

Motor fuel. *See* Gasoline.

Natural gas:
  Lacq, petroleum chemicals from, 99–104
  production, well stimulation at Lacq, 93–8
  storage underground at Lacq, 114–24
Nitrogen determination, semi-micro Kjeldahl method, 340–4

Obituary:
  Andrew, William, 26
  Auld, Samuel James Manson, 359
  Brooks, Benjamin Talbott, 26
  Fergusson, Sir Donald, 185
  Gray, Kenneth Washington, 153
  McColl, Sir Alexander, 27
  Murphree, Eger Vaughan, 91
  Starling, F. C., 27
*iso*Octane, flame propagation time, 204–14
Oklahoma, Springer and Hart formations, fracture orientation, 289–94
Operational research, productivity improvements, 47–9
Origin of petroleum, iron sulphide relation, 65–9

Partition coefficients, determination by chromatography, 73–80
Patel and Cameron lubricant tester, 169
Permeability, unconsolidated sands, relative, 73–80
Personnel, productivity, 49–52
Petroleum chemicals, from Lacq gas, 99–104
Petroleum industry, productivity in, 29–57
Petroleum products, nitrogen determination, 340–4
Polycyclic compounds, molecular structure, 252
Pour point, residual fuel oil, chilling effect, 263
Pressure–volume–temperature characteristics, 140–5
Production of oil:
  hydraulic fracturing, orientation and direction, 282–8
  orientation and rock stresses, 289–94
  miscible flood, gas selection, 225–34
  productivity improvements, 33–4
*iso*Propanol, determination in gasoline, 176–9

Refining:
  control and instrumentation, 329–39
  productivity improvements, 40–3

Sands:
consolidation with epoxy-resin, 392–7
unconsolidated, relative permeability, 73–80
Saudi Arabia, Ras Tanura crude oil, 274–9
Sulpholane:
extraction process, 1–7
properties, 1
Solvent extraction, sulpholane in Udex units, 1–7

Tankers, productivity improvements, 34–8
Test methods, IP, precision of, 155–67
Tetraethyl lead, effect on pre-flame reactions, 8–25
Tin, influence on oxidation of lubricating oil, 353–8
Tools, non-sparking fire safety, 180–3
Transport of oil:
ocean, productivity improvements, 34–8
Transport of oil (*contd.*):
pipeline, productivity improvements, 38–40

Udex process, sulpholane application, 1–7
Umm Shaif oilfield, 308–15

Viscosity, residual fuel oil, chilling effect, 263

JOURNAL OF THE INSTITUTE OF PETROLEUM

Honorary Editor
E. B. EVANS, M.Sc., Ph.D., F.R.I.C., F.Inst.Pet.

Honorary Associate Editor
A. W. DELLER, D.F.C., F.R.S.A., A.M.Inst.Pet.

Editor
M. J. WELLS

ABSTRACTS

VOLUME FORTY-NINE
1963

Published by
THE INSTITUTE OF PETROLEUM
61 NEW CAVENDISH STREET
LONDON, W.1

ABSTRACTS SUB-COMMITTEE

G. D. Hobson (*Chairman*).
V. Biske.
E. B. Evans.
J. G. Hall.
C. F. McCue.
M. F. Mohtadi.
P. H. Scott.
G. Sell.
A. D. Shellard.

ABSTRACTORS

C. J. Atkinson.
V. Biske.
M. W. Biddulph
B. Boroughs.
G. J. Brockis
G. Burger.
D. C. E. de Wit.
J. J. P. Dick.
H. C. Evans.
C. A. Fothergill.
J. G. Hall.
R. E. Hardwick.
G. D. Hobson.
P. P. Jackson.
H. Knight.
D. A. Lihou.
W. A. Mitchell.
G. J. Partridge.
P. H. Scott.
A. D. Shellard.
N. J. H. Small.
Miss F. J. Skinner
M. Swiss.
A. Taylor.
J. C. M. Taylor.
E. N. Tiratsoo.
R. Tyler.
L. Wilson.

JOURNALS ABSTRACTED DURING 1963

Abbreviated Title	*Journal*
ASME Trans.	ASME Transactions
Acta Chim. Hung.	Acta Chimica Hungarica
Analyst	Analyst, London
Angew. Chem.	Angewandte Chemie
Auto. Engr	Automobile Engineer
Bitumen, Teere, Asphalte, Peche	Bitumen, Teere, Asphalte, Peche, und Verwandte Stoffe
Brennst. Chemie	Brennstoff Chemie
Bull. Amer. Ass. Petrol. Geol.	Bulletin of the American Association of Petroleum Geologists
Bull. Ass. franç. Tech. Pétrol	Bulletin de l'Association Française du Techniciens du Pétrole
Bull. Japan. Petrol. Inst.	Bulletin of the Japanese Petroleum Institute
Bull. Polish Inst. Petrol.	Bulletin of Polish Institute of Petroleum
Canad. min. Metall. Bull.	Canadian Mining and Metallurgical Bulletin
Chem. Engng	Chemical Engineering
Chem. Engng Sci.	Chemical Engineering Science
Chem. Rev.	Chemical Reviews
Chem. Tech.	Chemische Technik
Chem. & Ind.	Chemistry and Industry
Chim. e l'Industr.	La Chimica e l'Industria
Chim. Anal.	Chimie Analytique
Chim. et Industr.	Chimie et Industrie
Combustibles (Zaragoza)	Combustibles (Zaragoza)
Conveyancer	Conveyancer
Corrosion	Corrosion
Deut. Lebensmitt. Rundsch.	Deutsche Lebensmittel Rundschau
Dielectrics	Dielectrics
Drilling	Drilling
Elect. Times	Electrical Times
Electronics	Electronics
Elektrizitätswirtschaft	Elektrizitätswirtschaft
Elektrotech. Z.	Elektrotechnische Zeitschrift
Energetika	Energetika
Engineer, Lond.	Engineer (London)
Erdöl u. Kohle	Erdöl und Kohle
Fluid Handl.	Fluid Handling
Industr. Chem.	Industrial Chemist
Industr. Engng Chem.	Industrial and Engineering Chemistry
Ingenieur, 's Grav.	De Ingenieur ('s Gravenhage)
Internat. Oilman	International Oilman
J. Assoc. Offic. Agric. Chem.	Journal of the Association of Official Agricultural Chemists
J. Chem. Phys.	Journal of Chemical Physics
J. Colloid Sci.	Journal of Colloid Science
J. Inst. Fuel	Journal of the Institute of Fuel
J. Inst. Petrol.	Journal of the Institute of Petroleum
J. Inst. Transp.	Journal of the Institute of Transport
J. Petrol. Tech.	Journal of Petroleum Technology
J. Polymer Sci.	Journal of Polymer Science
Kemija u Industriji	Kemija u Industriji
Khim. i Tekh. Topliva i Masel	Khimiya i Tekhnologiya Topliva i Masel
Kinetika i Kataliz	Kinetika i Kataliz
Lubrication	Lubrication
Lubric. Engng	Lubrication Engineering
Mafki Koz	Mafki Koz
Mat. Res. & Stand.	Materials, Research and Standards
Mech. Pwr	Mechanical Power
Nafta (Krakow)	Nafta (Krakow)
Nafta (Yugoslavia)	Nafta (Yugoslavia)
N.L.G.I. Spokesm.	National Lubricating Grease Institute Spokesman
Nature, Lond.	Nature (London)
Neftekhimiya	Neftekhimiya
Neft' i Gaz	Neft' i Gaza
Oil Gas Internat.	Oil and Gas International
Oil Gas J.	Oil and Gas Journal
Oil in Canada	Oil in Canada
Paint Tech.	Paint Technology
Petroleum, Lond.	Petroleum (London)
Petrol. Chem., U.S.S.R.	Petroleum Chemistry, U.S.S.R.
Petrol. Management	Petroleum Management
Pipe Line Ind.	Pipe Line Industry
Pipe Line News	Pipe Line News
Pipes & Pipelines	Pipes and Pipelines
Prace Instytutu Naftowego	Prace Instytutu Naftowego
Proc. Amer. Petrol. Inst.	Proceedings of the American Petroleum Institute
Proc. Instn Elect. Engrs.	Proceedings of the Institution of Electrical Engineers
Proc. Roy. Soc.	Proceedings of the Royal Society
Prod. Mon.	Producers' Monthly
Publ. Rds, Wash.	Public Roads (Washington)
Research	Research
Rev. gén. Elect.	Revue Générale de l'Eléctricité
Rev. Sci. Instrum.	Review of Scientific Instruments
Rev. Inst. franç. Pétrole	Revue de l'Institut Française du Pétrole et Annales des Combustibles Liquides
Riv. Combust.	Rivista dei Combustibili
Riv. Ital.	Rivista Italiana
Riv. Ital. Sost. Gras.	Rivista Italiana delle Sostanze Grasse
Ropa a Uhlie	Ropa a Uhlie
Rubber Plastics Age	Rubber and Plastics Age
Schweiz. Arch. Angew. Wiss.	Schweizer Archiv für Angewandte Wissenschaft und Technik
Sci. Lubric.	Scientific Lubrication
Shell Aviation News	Shell Aviation News
Teploenergetika	Teploenergetika
Trans. Faraday Soc.	Transactions of the Faraday Society
Trans. Inst. mar. Engrs	Transactions of the Institute of Marine Engineers
Trans. Instn. chem. Engrs, Lond.	Transactions of the Institution of Chemical Engineers
Vestnik Elektroprom.	Vestnik Elektropromyshlennosti
Wear	Wear
World Oil	World Oil
World Petrol.	World Petroleum
Zhur. Fiz. Khim.	Zhurnal Fizicheskoi Khimii
Zhur. Obshchei Khim.	Zhurnal Obshchei Khiimi
Zhur. Prikladnoi Khim.	Zhurnal Prikladnoi Khimii

ABSTRACTS

OILFIELD EXPLORATION AND EXPLOITATION

Geology 1 A, 17 A, 37 A, 61 A, 89 A, 115 A, 131 A, 155 A, 169 A, 199 A, 219 A, 239 A

Geophysics and Geochemical Prospecting 3 A, 19 A, 39 A, 63 A, 117 A, 132 A, 160 A, 171 A, 200 A, 220 A

Drilling 3 A, 19 A, 39 A, 64 A, 91 A, 117 A, 132 A, 160 A, 172 A, 200 A, 220 A, 242 A

Production 4 A, 21 A, 40 A, 67 A, 94 A, 118 A, 135 A, 161 A, 173 A, 202 A, 222 A, 243 A

Oilfield Development 5 A, 22 A, 40 A, 71 A, 98 A, 118 A, 137 A, 174 A, 205 A, 223 A

TRANSPORT AND STORAGE 6 A, 23 A, 41 A, 72 A, 99 A, 120 A, 138 A, 162 A, 176 A, 206 A, 224 A, 244 A

REFINERY OPERATIONS

Refineries and Auxiliary Refining Plant 7 A, 24 A, 41 A, 73 A, 100 A, 120 A, 140 A, 163 A, 178 A, 206 A, 225 A

Distillation 26 A, 43 A, 74 A, 100 A, 178 A, 207 A

Absorption and Adsorption 74 A, 207 A

Solvent Extraction and Dewaxing 207 A

Cracking 26 A, 43 A, 74 A, 101 A, 140 A, 163 A, 179 A, 208 A, 225 A, 244 A

Hydrogenation 140 A, 208 A, 244 A

Polymerization, 26 A, 44 A, 179 A, 209 A, 244 A

Alkylation 44 A, 140 A, 226 A, 245 A

Isomerization 75 A

Chemical and Physical Refining 27 A, 75 A, 101 A, 141 A, 179 A, 209 A, 226 A

Special Processes 8 A, 27 A, 44 A, 75 A, 102 A, 121 A, 141 A, 163 A, 179 A, 210 A, 226 A, 245 A

Metering and Control 9 A, 76 A, 102 A, 142 A, 227 A, 245 A

PRODUCTS

Chemistry and Physics 9 A, 28 A, 45 A, 76 A, 102 A, 121 A, 142 A, 163 A, 180 A, 210 A, 227 A 245, A

Analysis and Testing 9 A, 29 A, 47 A, 77 A, 103 A, 121 A, 143 A, 163 A, 181 A, 211 A, 229 A, 247 A

Crude Oil 30 A, 77 A, 103 A, 230 A

Gas 9 A, 48 A, 77 A, 181 A, 212 A, 230 A, 248 A

Engine Fuels 10 A, 31 A, 48 A, 77 A, 103 A, 122 A, 164 A, 181 A, 212 A, 248 A

Gas Oil and Fuel Oil 77 A, 164 A, 182 A

Lubricants 10 A, 31 A, 48 A, 78 A, 104 A, 122 A, 144 A, 164 A, 182 A, 213 A, 231 A, 248 A

Bitumen, Asphalt, and Tar 10 A, 32 A, 49 A, 79 A, 107 A, 144 A, 165 A, 183 A, 213 A, 231 A

Special Hydrocarbon Products 11 A, 32 A, 49 A, 79 A, 124 A, 144 A, 167 A, 184 A, 213 A, 231 A, 248 A

Derived Chemical Products 11 A, 33 A, 49 A, 79 A, 108 A, 125 A, 185 A, 214 A, 232 A, 249 A

Coal, Shale, and Peat 79 A, 125 A, 145 A, 214 A

Miscellaneous Products 33 A, 108 A, 125 A, 186 A, 214 A

CORROSION 11 A, 33 A, 50 A, 80 A, 108 A, 126 A, 145 A, 186 A, 215 A, 233 A, 249 A

ENGINES AND AUTOMOTIVE EQUIPMENT 34 A, 51 A, 80 A, 167 A, 215 A, 233 A

SAFETY PRECAUTIONS 34 A, 52 A, 109 A, 145 A, 167 A, 215 A

ECONOMICS AND MARKETING 11 A, 35 A, 52 A, 80 A, 109 A, 126 A, 146 A, 191 A, 215 A, 233 A

MISCELLANEOUS 12 A, 35 A, 52 A, 81 A, 109 A, 126 A, 146 A, 167 A, 192 A, 216 A, 233 A, 250 A

BOOK REVIEWS 13 A, 54 A, 83 A, 111 A, 127 A, 148 A, 168 A, 192 A, 216 A, 234 A, 250 A

ADDITIONS TO THE LIBRARY 57 A, 87 A, 112 A, 127 A, 153 A, 196 A, 236 A, 252 A

AUTHOR INDEX, 255 A

SUBJECT INDEX, 259 A

BOOKS REVIEWED, 269 A

ABSTRACTS AUTHOR INDEX

The figures refer to Abstract numbers

Abramov, V. N., 1443
Adams, G. F., 71
Adams, W. E., 197
Adel'son, S. V., 1116
Aerov, M. E., 1281
Agaev, N. A., 1553
Askin, V., 965
Albrecht, H., 899
Albright, L. F., 910
Aleksandrov, I. A., 1110
Aleksin, A. G., 1271
Alessandria, A. V., 148
Alexander, J. D., 598
Alfred, G. H., 589
Algermissen, S. T., 934
Aliyeva, Kh. M., 1546
Allen, R. E., 359
Alliquander, O., 444, 1370
Allison, W. D., 274
Almasy, G., 184
Alneri, E., 929
Althouse, W. S., 131
Alyre, P., 407, 572
Amirbekov, N. M., 1141
Amsden, T. W., 971
Amundson, N. R., 1304
Anderson, K. H., 1078
Anderson, S. A., 992
Andreev, N. S., 1472
Andrews, A. J., 1417
Anstey, N. A., 1060
Arbellot, —, 814
Arnesen, T., 152
Arnold, B. B., 1383, 1518
Arnold, C. W., 126
Arnold, M. D., 436, 602
Aronofsky, J. S., 521
Artese, S. J., 149
Arthur, K. B., 597
Arumeel, E. Kh., 1344
Asinger, F., 1474
Aspel, N. B., 1308
Asselin, G. F., 58
Astarita, G., 1292
Atteridg, P. T., 286
Augustin, J. U., 792
Ausloos, P., 645
Ausman, J. M., 632
Austin, C. H., 225
Averill, W., 776
Avery, H. S., 322
Avery, W. J., 468
Aziz, K., 509, 862, 905, 1263, 1387, 1520

Babic, R., 488
Back, R., 767
Backenstro, E. D., 1195
Bade, J. F., 848
Bahari, E., 1409
Baiburskii, L. A., 1111
Bailey, F. H., 546
Bailey, R. L., 1245
Baird, J. A., 239
Baker, D. R., 991
Balenkova, Ye. S., 1541
Balint, T., 194
Ballabio, C., 1483
Ballard, E. C., 141
Ballmer, R. W., 156
Bandy, O., 1009
Baranova, Z. P., 1554
Barbor, R. P., 65
Bardsley, S. R., 934
Barham, R. H., 605
Barker, P. E., 628
Barker, R., 775
Barnes, A. L., 594
Baron, G., 318, 1068
Barr, W. E., 1417
Barras, R. C., 1429
Barth, E. J., 796
Bartlett, C. S., 7
Bartlett, W. R., 605
Barusch, M. R., 1193
Bashforth, E. Q., 1299
Bastikanic, —, 196
Bathory, J., 162, 183
Baumgartner, A. W., 710, 829
Baxa, J., 1130
Beales, F. W., 1492
Beapolov, I. E., 1129
Beazier, C. W., 486
Beck, R. L., 1083
Becker, F. S., 150
Becker, K. M., 1297
Becker, K. W., 993
Bedov, Yu. A., 1538
Beggl, C., 496
Behrens, R. W., 993
Bell, A. G., 77
Bell, W. T., 561, 603
Bellassai, S. J., 518
Beiskaya, T. N., 1514
Bencze, L., 1391
Bencze, P., 203
Bendel, E., 780
Bender, M. H., 744
Benedek, P., 180
Bennett, B. B., 1139
Bennett, R. G., 948
Berg, R. R., 973
Bergeron, F. L., 448
Bernard, G. G., 1256
Bernard, P., 1571
Bernsmann, J., 1319
Berry, R. F., 1081
Berry, W. B. N., 962
Berti, I., 327
Berti, V., 63
Bese, V., 1391
Bestian, H., 1473
Beuther, H., 294
Bickel, H. J., 720
Biddick, J. R., 1051
Biernat, Z., 392
Bike, P. B., 13, 1058
Bistline, R. E., 268
Bizal, R. B., 33, 234, 461
Blackwell, R. J., 120
Blackwood, I. B., 1003, 1101
Blagovidov, I. F., 1568
Blake, E. J., 661
Blakeman, E. R., 381
Bleakeley, W. B., 119, 581
Blenkarn, K. A., 389
Blevins, T. R., 1537
Bluhm, W. C., 273
Bobo, R. A., 1376
Boggs, J. E., 1185–6
Bogoslovskii, V. E., 1112
Bohm, M., 347
Boldt, M., 1118
Bol'shakov, G. F., 1327
Bonham, L. C., 1047
Bonnell, W. S., 161
Bonnier, B. E., 708
Bor, G., 184, 193
Boranic, V., 1276
Borg, A. C., 696
Borgars, D. J., 1418
Bortolini, P., 348
Bowman, P. B., 1037
Boyd, D. M., Jr, 278
Boyd, J. L., 28
Boyle, J. F., 1429
Bozeman, H. C., 59, 460, 903, 906
Brady, S. O., 159
Bral, I. V., 508, 1575
Brainerd, H. A., 457
Braithwaite, B., 1446
Brannen, C. G., 680
Bray, E. E., 980
Bray, R. K., 1537
Brewer, P. I., 1462
Bridgeman, O. C., 206
Brinegar, C. S., 719
Brisac, J., 833
Brix, V. H., 662
Brodkey, R. S., 1107
Brodskii, A. M., 1548
Brooks, J. A., 1416
Brooks, R. E., 1201
Brooks, W. B., 832
Broome, D. C., 798
Brosoff, V. N., 660
Broughton, D. B., 295
Brown, C. M., 1134
Brown, C. W., 1502
Brown, K. C., 80
Brown, R. W., 847
Brownawell, D. W., 1140
Bruce, G. H., 23
Brun, A., 578
Brundage, H. T., 1048, 1062
Brunstrum, L. C., 693, 696–7
Bruzzone, M., 303
Bryl, H., 387
Bubanj, A., 1354
Buckley, D. H., 1579
Budee, B., 1315
Budee, R., 1477
Bukowiecki, A., 709
Bullion, J. W., 530
Burak, S., 391
Burckhardt, Ch., 779
Burdine, F. B., 720
Burgess, R. J., 823
Burmeister, H. E., 211
Burns, D. L., 221
Burns, J. A., 161
Burns, R. J., 949
Butner, M. F., 654
Butterfield, P. R., 1346
Butterworth, C. A., 1106
Bylica, B., 1374
Byrne, F. B., 1040
Byrne, R., 694

Caffo, E., 189
Calderwood, W., 1524
Calikowski, A., 1211, 1226
Calvert, J. W., 122
Cameron, A., 670, 921, 1433
Campbell, J. M., 536
Campbell, P. G., 1037
Campo, C., 1564
Carberry, J. J., 636
Caris, D. F., 222
Carmody, E. O., 342
Carpenter, N. F., 570
Carr, N. L., 469
Carra, S., 64
Carré, G., 922
Carroll, J. G., 687
Carruthers, J. A., 1431, 1540
Carsey, J., 1521
Case, J. E., 990
Casey, W. H., 1396
Ceselli, C. A., 476
Chaiken, B., 1151
Chajec, W., 1458
Chakravarty, N. K., 1463
Champagnet, A., 813
Chan, Y. C., 1252
Chang, S. S. L., 1360
Chapman, F. W., Jr, 324
Chapotel, —, 462
Charrin, D., 561
Chaumet, P., 998–9
Chen, D. K. Y., 1360
Chernozhukov, N. I., 1438
Chernyak, N. Ya., 1562
Chessick, J. J., 1143
Chierici, G., 583
Christian, J. B., 668, 1143
Christmas, L. B., 1219
Chu, P. S. Y., 921
Ciampelli, F., 165, 195
Clark, J. W., 399
Clark, N. J., 128
Clarke, S. A., 802
Clegg, J. D., 1384
Coats, K. H., 424
Cobb, J. B., 394
Coburn, R. W., 1260
Cochrane, J. M., 740
Coekelbergs, R. F. R., 1555
Coit, R. A., 1028
Colamasi, C., 1072
Cole, E. L., 1234
Collins, A. G., 1258
Collins, J. J., 900
Colonna, J., 1102
Colovic, T., 218
Colson, E. R., 1134
Comeaux, R. V., 1190
Comer, A. G., 885
Conley, J. N., 724
Connor, J. E., 287
Cook, G. L., 301
Cook, R. J., 588
Cook, W. B., 1192
Coolidge, J., 564
Cooper, A. M., 1071
Coote, G. F., 15
Cordischi, D., 166
Cordon, J. L. M., 1328
Corey, W. H., 1498
Cosgrove, S. L., 657
Couper, A. S., 334
Cowan, W. C., 1395
Craig, H. L., 1580
Craig, W. D., 658
Crake, W. S., 560
Cram, I. H., 959
Crawford, J. M., 989
Crawford, P. B., 436, 602, 853, 1257
Crespi, G., 303–4
Crouch, R. F., 1433
Crowter, D. G., 73
Cubranic, A., 196
Cummins, R. A., 1558
Curdjian, V., 293
Czajkowska, J., 35
Czastra, J., 539, 1021
Czerwinska, S., 403–5

Dahlke, B., 115
Daley, F. R. L., 209
Daniel, S. G., 5987
Danilov, I. N., 1135
Darden, F., 588
Dare, H. F., 478, 638
D'Arnaud, G. J. C., 716
Daubertes, C., 506
Davis, J. B., 32
Davis, R. C., 70
Davis, T. C., 339
Dean, J. T., 832
de Bouczan, M. A., 933
de Bruyn, C. A. L., 1525
Decker, R. R., 151
Deeter, W. F., 340
Deffraune, P., 999
Degent, C., 269
de Henau, G., 1533
delle Canne, A., 1072
Delle Site, A., 166
Delzenne, A., 285
de Malde', M., 167
Demeester, J., 478, 638, 770
Dennison, J. M., 1508
Densham, A. B., 1449
Desty, D. H., 188
Deutch, M. J., 1482
Dew, J. N., 598
Dewoody, O. A., 323
Dichter, M., 504, 1451
Dieumegard, M., 712
Ditman, J. G., 1306
Dixon, J. A., 300
Doble, F. C., 509
Dobryansky, A. F., 956
Doeglas, D. J., 545
Dome Petroleum Co. Ltd, 1091
Donlan, T. R., 1013
Donnell, C. K., 284
Doppenberg, H., 715
Dorange, M., 579
Doremus, E. P., 1478
Dorn, N., 1153
Dorovaya, M. S., 1568
Dowson, D., 1126
Dozier, H. S., 591
Drager, G., 1319
Dravnieks, A., 220, 1198
Drew, R. D., 897
Drozd, W., 90, 1333
Duce, J. T., 113
Ducommun, J. C., 226
Dueltgen, R. L., 657
du Jeu, —, 1561
Dull, R. G., 20
Durbenic, V., 328
Dutro, J. T., 969
Dyer, N. D., 559

Eakin, B. E., 1010
Eakin, J. L., 434
Easton, C. L., 1169
Eastwood, S. C., 474, 897, 1007
Eckhardt, F., 782
Edgar, J. A., 667
Eggleston, W. S., 535
Ehmke, E. F., 1170
Eisenbrand, J., 326, 1337
Eizen, O. G., 1344
Eldridge, G. G., 1199, 1200
Ellender, J. H., 124
Ellington, R. T., 1010
Elliott, K. M., 474, 1007
Ellis, E. G., 674, 786
Ellis, E. R., 764
Ellis, H. E., 128
Elston, D. P., 964
Emery, K. O., 980
Emery, L. W., 121
Engelhardt, F., 639
Eremin, E. N., 1440, 1556
Ernst, E. A., 570
Etienne, J., 1046
Ettre, L. S., 776
Evans, D. J., 1178
Evans, E. A., 73
Evans, I. S., 1026
Evans, T. W., 1209
Everett, R. H., 844
Eyraud, L. E., 857

Fahnestock, F. C., 342
Fair, J. R., 1109

Faith, W. L., 338
Fallou, B., 1573
Fancher, G. H., 529
Fapff, S. F., 311
Farina, G., 277
Farouq Ali, S. M., 1255
Farrar, G. L., 893, 1004
Fast, C. R., 34
Fauzi, M. A., 1438
Fehervari, A., 204, 219
Felsenthal, M., 437
Feng I-Ming, 202
Fenyi, M., 212
Ferguson, W. S., 1011
Ferrand, R., 916
Ferrell, H. H., 437
Ferris, C., 242
Fewster, E. V., 1029
Filstead, C. G., 270
Fincher, D. R., 1182, 1202
Finkles, E. E., 400
Finnie, I., 815
Fisher, I. P., 309, 1542
Fisher, J. J., 1049
Fiumara, A., 319
Fleszar, B., 25, 1248
Flinn, R. A., 294
Flisi, U., 304
Flock, F. H., 88
Foehse, C., 1154
Fohs, F. J., 987
Foldi, T., 204
Földiák, G., 310
Folmer, O. F., 1434
Foose, R. M., 960
Forderreuther, M., 918, 1120
Forgotson, J. M., 1212
Foster, G. A., 237
Foster, N. G., 301
Foster, R. W., 978
Frame, J. D., 157
Franks, M. C., 1557
Frasch, J., 542
Fraser, J. P., 1109, 1200
Freedman, A. J., 1175, 1198
Freeman, A. S., 473
Friedlin, L. Kh., 1545
French, K. H. V., 924
Freund, M., 170, 191, 203
Friend, J. A., 1432
Frilette, V. J., 491
Fritz, I. T., 70
Froment, G. F., 634–5
Fuchtbauer, H., 1
Fujita, S., 1352
Fuller, H. T., 268
Funakubo, E., 646, 1133, 1320
Furman, G. R., 675
Furnish, W. M., 976

Gabrielow, F., 90, 1333
Gainsbrugh, M. R., 227
Galich, P. N., 1543
Galli, L., 277
Garcia, A., 123
Gardner, F. J., 2, 4, 6, 39, 103, 106–7, 235, 240, 244, 364, 369, 547–8, 550, 555, 610, 723, 725–7, 822, 827, 872, 880, 976, 1050, 1052, 1086, 1100, 1213, 1265, 1506
Gardner, G. C., 1298
Gardner, G. S., 1578
Garner, L. H., 276
Garrett, W. R., 562
Gartley, A. C., 1022
Gaskell, T. F., 830
Gattegno, A. C., 1137
Gaube, J., 175, 905
Gaussent, P., 477
Gauthier, G., 1068
Gavis, J., 229, 940, 1042
Gay, E. J., 224
Gayer, R. A., 1063
Geerlings, M. W., 629–30
Geilenkeusser, H., 1274
Gelius, R., 1450
Gel'perin, N. I., 1554
Gerarde, D. F., 360
Gerarde, H. W., 360
Germain, J. E., 475
Gershinowitz, H., 1209
Gibbon, A., 745
Gibson, R., 1216
Gibson, R. G., 554
Giermanski, A., 1225
Gilpin, R. L., 1557
Gipp, S., 1156
Girelli, A., 177, 1294
Girzejowski, J., 1402
Givens, J. W., 656, 1019
Gladisch, M., 480
Glogoczowski, J. J., 492, 1211, 1226
Goatin, A. M., 291
Gobjila, A. G., 1307
Gol'dberg, D. O., 1288
Golowski, L., 647
Golubev, I. F., 1553
Gonsales, A., 1290
Gonzalez, H. J., 436
Goode, J. M., 432
Goodwin, R. J., 571
Gordillo, C. A., 237
Gorry, L. J., 1041
Grady, D., 22
Grane, H. R., 287
Grantz, A., 981
Grayley, W., 832
Gray, F. F., 1093
Gray, R., 859
Grayson, C. J., 114
Greathouse, W. D., 1181
Green, B. Q., 1232
Greenfield, S. H., 703, 1465
Greenkorn, R. A., 858
Griffin, P. E., 869
Griffith, J. Q., 668
Grilliat, J., 1577
Grimm, A., 899
Grimm, R. D., 619
Grondona, A., 346
Groszek, A. J., 489
Grubb, W. E., 1261
Grutter, A., 779
Gruy, H. J., 129
Guardipee, K. W., 1040
Guccione, E., 1296
Guerrero, E. T., 717
Gumulczynski, J., 403–6
Gundermann, E., 800
Guseva, A. V., 1129

Haag, D., 191
Hachenberg, H., 711, 918, 1120
Haenni, E. O., 1447, 1448
Haenni, R., 707
Hagemann, W., 84
Hager, D., 1210
Haines, H. W., 1164, 1165
Haites, T. B., 1494
Halasz, I., 920
Halbouty, M. T., 531
Hale, D., 890
Hall, P. C., 602
Hall, W. A., 160
Hallgarth, W. E., 970
Halling, J., 818
Halstead, W. J., 1151
Halter, R. C., 279
Hamilton, S. V., 835
Hamman, J. P., 438
Hammer, H., 639
Hancock, R. N., 275
Handin, J., 1489
Handy, L. L., 1002
Hanratty, T. J., 1301
Harder, P., 386
Hardman, R., 75
Hark, H. U., 76
Harmens, A., 1300
Harnish, D. H., 718
Harrington, H. J., 983
Harris, D. N., 230
Harris, L. D., 1500
Harris, S. E., 939
Hartman, M. A., 663
Hartung, H. A., 141
Hartzell, F. D., 897
Harwood, J. H., 911
Haskell, L. G., 1193
Hassebrock, W. E., 867
Hawkins, E. A., 158
Hayes, A. H., 153
Haynie, O. K., 412
Hayward, A. T. J., 1144
Headlee, A. J. W., 361–2
Heath, C. E., 352
Hecker, R. Th., 1514
Heinze, G., 74, 1156
Heinze, H. O., 782
Helberg, D., 1321
Heller, C. A., 263
Hellwig, J. D., 160
Hellwig, L. R., 62
Henderson, J. H., 1075, 1076
Hendriks, W. J., 168, 901–2, 907, 1119
Henke, A. M., 469
Herion, E., 1149
Herrig, H. J., 1132
Herzog, R. E., 141
Hessenauer, F., 765
Heumann, J. R., 1378
Hey, G., 1428
Heylen, A. E. D., 1311
Hickling, J. W., 313
Higgins, R. V., 132, 590
Hildebrand, G., 1155
Hildebrand, R. L., 221, 147
Hill, L. R., 280
Hobbs, C. F., 299
Hobbs, M., 18, 250, 396, 1067
Hodges, J. E., 108
Hodges, J. W., 593
Hoelscher, H. E., 229
Hofmann, H., 88
Hogsett, H. F., 483
Hogwood, E. E., 883
Holdsworth, M. P., 142
Holl, A., 1146
Hollyday, W. C., 1140
Holmes, E. F., 592
Holton, D. S., 836
Hopkins, V., 1024
Horn, M. K., 576
Horth, A. C., 1030
Houdek, A., 1152
Hoverath, A., 811
Howard, R. L., 837
Howarth, H. M., 155
Howlett, T. W., 54
Hoy, R. B., 960
Hrubes, J., 1334
Hubbard, M. E., 1404
Hubenett, F., 88
Huebner, G. J., Jr, 223
Hughes, E. D., 954
Hughes, E. M., 771
Hughes, R. E., 1251
Huibers, D. T. A., 631
Hulsey, B. T. H., 522
Hunt, E. B., 644
Hunter, F. W., 619
Huntington, R. L., 1220
Hupka, Gy., 182
Hupperts, P. H., 335
Hurn, R. W., 339
Hurst, W., 412
Husnjak, P., 1413
Huthnance, W. B., 743
Hyatt, K., 200

Igonin, P. G., 1342
Ikrath, K., 1066
Illes, V., 180
In'kova, N. M., 1322
Ireton, E. T., 1253
Ishigaki, S., 1303
Isley, W. F., 1347
Ivanov, K. I., 325, 1158
Ivanov, V. S., 86
Ivanovic, Z., 421
Ivey, H. F., 937

Jackson, C., 1221
Jackson, E. G., 793
Jackson, T. L., 777
Jacobs, R. B., 311
Jacquard, P., 1079
Jacqué, L., 89, 515
Jagacic, T., 246
Jaggard, N., 148
Jahoda, K., 81
Jameson, M. S., 534
Jamieson, D., 79
Jankowiak, L., 1351
Jaszczewski, Z., 16
Jeandot, —, 1561
Jeffers, P. H., 737
Jefferson, S. J., 1269
Jelovica, R., 1329
Jenkins, R., 1560
Jenner, P., 115
Jennet, E., 470
Jennings, E. R., 861
Jessen, F. W., 1001
Jewell, R. G., 340
Joesting, H. R., 990
Johnson, B. M., 634
Johnson, C. R., 858
Johnson, H. M., 1080
Johnson, J. F., 788
Johnson, L. M., 279
Johnson, R. L., 1579
Jones, H., 884
Jones, K. R., 855
Jones, L. L., 243
Jones, M. P., 1065
Jones, P., 133
Jopek, F., 446
Jost, W., 1326
Jucha, S., 375
Junker, H. J., 169
Jurjasevic, S., 1338
Jursic, S., 1339

Kaiser, H. R., 1303
Kalb, B., 1267
Kalil, P., 1018
Kalinski, A., 1371
Kampos, K., 203
Kamptner, H., 472
Kang, J., 1434
Karel, G., 230
Karlic, S., 1487
Karner, G. L., 1021
Karnowski, P., 1366
Karp, J. C., 426
Kartinin, B. N., 1438
Kassube, J. R., 1093
Kastrop, J. E., 397–8, 411, 575
Katz, D. L., 424
Kaup, Yu, 1545
Kayser, J. N., 343
Kazakova, L. P., 1455
Kazanskii, V. B., 1444
Keagy, C. B., 31
Keane, C. C., 449
Keil, G., 807
Kelley, J. S., 750
Kendall, P. F., 503
Kenworthy, J. D., 859
Kepler, F. M., 150
Kerbow, O. D., 992
Kerenyi, E., 190, 198
Kern, R. C., 58
Khakimov, G. Kh., 1421
Khalil, K. H., 896
Khmel'nutskii, R. A., 1562
Kiel, O. G., 425
King, I. R., 653
King, R. J., 1356
Kirby, J. H., 1394
Kirigin, F., 1407
Kirkpatrick, C. V., 1043
Kiselev, A. V., 1443
Kislow, A., 380
Kissa, E., 774
Kiszakiewicz, L., 504
Klamann, D., 1118
Klapper, G., 976
Klement'eva, N. F., 1322
Klienmann, E. E., 486
Klimenox, B. Y., 1439
Klimke, R., 1153
Klinge, L. N., 1176
Klumpp, E., 184
Knapp, M., 109, 257
Knorre, Y. G., 1441
Knowles, R. S., 730
Knox, J., 1383, 1518
Koblinski, W., 1380
Kobozev, N. I., 1440, 1556
Kock, W. M., 574
Koehler, J. F., 1179
Koester, E. A., 1057
Koger, W. C., 816
Kohn, E. M., 1127
Kok, J. A., 1336
Kokurin, A. D., 1472
Kolbanovskii, Yu. A., 1548
Kolbanowskaja, A. S., 1148
Kolbel, H., 164, 175, 639, 642, 905, 1118, 1293
Kolesnikov, I. M., 1549
Kolombo, M., 1329
Konlor, K., 1365
Kopkin, M. G., 926
Koppe, P., 795
Kopper, P. K., 549
Kornfeld, J. A., 11, 365, 736, 1214, 1359
Kortunowa, A. K., 455
Kosteck, A., 1227
Kozman, L., 940, 1042
Kottlowski, F. E., 978
Kovats, E., 171
Kowalowka, A., 505
Kozlov, G. I., 1441
Kraaijveld, H. J., 1125, 1309, 1442
Krach, E., 1368
Kraemer, P., 797
Kranz, S., 82
Krause, W. F., 256
Krey, T., 1217
Kroger, C., 1475
Krol, B. B., 1324
Krueger, R. F., 849
Krumbein, W. C., 1497
Kuhn, W., 467
Kulakova, R. V., 926
Kuliev, A. M., 1574
Kunst, E. D., 1481
Kunzenbacher, A. A., 1020
Kupfer, D. H., 961
Kvenvolden, K. A., 979
Kwaciszewska, A., 423
Kwadas, E. J., 250
Kwiecinski, L., 1476

La Bros, C., 269
Ladley, R. S., 1585
Lagge, M. S., 742
Lagoutte, P., 199
Laky, J., 170
Lamb, L. L., 1378
Lamont, N., 1001
Landa, S., 213, 1295
Landau, R., 349
Landes, K. K., 608, 614
Landis, E. R., 964
Landis, N. J., 1582
Landon, R., 358
Lang, K. F., 1475
Langemann, H., 1293

Larson, W. S., 977
Laszio, A., 182, 215
Latus, T. J., 1523
Laurent, D., 922
Lawrence, C., 873
Lawrence, C. J., 368, 553
Leavitt, H. J., 353
Lebedev, V. B., 1437
Lee, M. N. Y., 468
Lee, M. R., 989
Leese, S. E. 676
Lefoe, N., 616
Lefol, J., 507
Leighton, A. J., 132, 590
Lemke, H., 1469
Lenac-Lukacevic, N., 1316
Lenzi, M., 166
Leonhardt, E., 566
Lependina, O. L., 1547
Leprince, P., 1425
Lermoyez, M., 641, 1430
Letters, K., 1034
Leuteritz, G., 164
Leuteritz, G. M., 919
Leva, M., 1114
Levanas, L. D., 904
Lewis, G. H., 1426
Lewis, H. R., 1569
Lewis, P., 672
Lewis, R., 1105
Lewkowitsch, P. R. E., 1145
Lias, S., 645
Lichtblau, J. M., 533
Lickus, A. G., 295
Liddell, C., 1559
Lipari, C. A., 997
Lipinski, F., 1539
Lipshtein, R. A., 806, 1029, 1159
Liszka, K., 422, 1379
Little, J., 748, 945
Ljunglin, J. J., 627
Logan, H. L., 1180
Logan, J. L., 131
Lohman, S. W., 975
Lombardi, P. J., 149
Longfield, M. D., 1126
Lonhardt, E., 409
Loper, D., 154
Loroue, D., 778
Losonezy, G., 216
Love, F., 417, 623
Love, F. H., 452, 892, 936
Loveland, J. W., 307
Lowe, D. K., 426
Lubinski, A., 131
Lucquin, M., 643
Ludwig, A. L., 230
Lugar, I., 1341
Lugasch, M. N., 657
Lummus, J. L., 401
Luther, M. W., 284
Lyczewska, J., 1357
Lygin, Y. I., 1443
Lyman, F. A., 789
Lyn, W. T., 1012, 1128
Lyson, D., 1031
Lyzhetskii, A. A., 1158

Macak, J., 1454
McCamish, H. M., 891
McConnell, G., 336
MacConochie, I. O., 787
McCullough, J. D., 197
McDaniel, S. L., 1027
McDaniel, W. W., 151
Mace, G. E., 1272
MacEachern, S. B., 1522
Macek, I., 1314
MacElvain, R. C., 821, 828
McGhee, E., 117, 252, 838, 1237
McGlasson, R. L., 1181
McGrath, H. G., 280
MacQueen, R. B., 1192
Maczel, H., 504
Maddock, E. G., 52
Maddox, R. N., 483
Maffezzoni, U., 929
Magie, P. M., 669
Maier, L. F., 399, 584
Maier, R. W., 1192
Makarov, P. T., 1322
Mallory, W. W., 1490
Manley, H. W., 1426
Mannas, E. C., 484
Manovyan, A. K., 1111
Manston, D. W., 419
Marconi, W., 167
Marcucci, P., 346
Maretic, M., 178
Mark, H. U., 137
Marko, L., 170, 172, 184, 193
Markovic, T., 488
Marks, C., 222
Marle, C., 595
Marsal, D., 523
Marsh, G. A., 519
Marsh, K. J., 1540
Martin, F. G., 1261
Martin, G. H., 721
Martin, J. C., 481
Martin, J. D., 904
Martin, S. J., 717
Martin, W. L., 598
Marusov, N., 421
Marzel, M., 1340
Masdin, E. G., 1136
Maslyanskii, G. H., 1117
Masologites, G. P., 287
Mason, J. F., 1586
Mason, J. F., Jr, 1183, 1191
Mason, P. R., 1558
Massimilla, L., 289, 1287
Mastin, R. G., 1041
Mastrorazio, F., 331
Mastrovita, E., 289
Mathews, W. H., 982
Mathieu, M. P., 1555
Mattheis, E., 1246
Mattozzi, M., 1539
Maubeuge, P. L., 371
Maurel, R., 475
Maurer, W. C., 568
Maxwell, V. W., 1171
May, W. W., 1229
Mayborn, M., 408, 558–9, 1238
Mclaven, R. M., 153
Mele, A., 166
Mennell, R. D., 869
Mertens, E. W., 799
Mesnard, P., 493
Metamonski, Z. G., 597
Meyer, E., 927
Meyer, R. H., 1194
Meyerhoff, A. A., 1493
Michael, F., 1319
Michaels, A. S., 302
Michailow, W. W., 1148
Miegl, J., 700
Mikhailov, G. M., 1552
Milan, L. B., 826
Milani, R., 66, 214
Miles, F. V., 127
Miller, D. F., 208
Miller, J. B., 984
Miller, S. A., 808
Milne, J. E. S., 1522
Milner, H. B., 803
Mimuna, K., 443
Minne, J. L., 142
Mirsky, A., 972
Mirzoeva, E. A., 86
Misiak, W., 537
Misk, A., 831
Mitura, F., 374
Modine, T. P., 272
Moller, G. E., 1172
Momedov, Sh., 1546
Montgomery, J. R., 451
Moore, K. L., 33, 1583
Moore, S. C., 116, 251
Moore, W. R., 1462
Moore, W. W., 383, 843, 1517
Mooyaart, W. E., 1527
Moran, J. H., 390, 400, 1586
Morgen, R. A., 591
Moritani, I., 1320
Morris, J. S., 382
Morris, W. E., 200
Mosic, A., 1277
Moulin, M., 176, 704
Moxley, M. M., 1009
Moyer, R. G., 682
Mozes, G., 212
Mudge, M. R., 969
Muller, K., 800
Mullins, J. D., 569
Mullins, L. D., 605
Munns, G. W., 491
Murphy, F. B., 1584
Murray, G. W., 659
Murray, S. F., 672
Murzabulatov, Kh. A., 1135

NACE Task Group T-1B-1, 1196, 1204
NACE Task Group T-5B-3, 1204
NACE Tech Cttee, 1174, 1188
NACE Tech Unit Cttee T-2H, 1203
Naar, J., 1075–6
Nabbefeld, R. L., 747
Nagai, K., 1312
Nagano, M., 501
Narchkina, T., 1550
Nathan, W. S., 336
Natiromi, K., 1485
Nawrocki, J., 1223
Nelson, J. K. B., 393, 395
Nemeth, A., 182, 215–16
Nettleton, L. L., 958
Newham, J., 1123
Newingham, T. D., 655
Newman, W. H., 787
Ney, R., 1364
Nicholaichuk, M. P., 1026
Nikias, P. A., 856
Nikolaev, A. M., 1552
Nikolic, D., 373
Nofsinger, C. W., 698
Noll, C. R., 205
Norris, E. T., 805
Norrish, R. G. W., 773, 1436
Northrop, J. W., 1493
Notari, B., 288
Nuzzi, M., 1294

Obreskov, V. D., 1472
O'Donnell, J. P., 51, 458
O'Donnell, T. J., 1059
Oertli, H. J., 986
Ogrodowska, J., 1451
Olewicz, Z., 1361
Olive, M. J., 1581
Olsen, R. E., 1151
Olsson, R. K., 1509
O'Neill, B. J., Jr, 960
Oosterhout, J. C. P., 1187
Orcutt, F. K., 499
Orlanai, C., 177
Orzag, I., 183
Osipov, O. B., 1546
Osment, B. D. J., 1108
Osmond, J. C., 974
Osolpova, A. I., 1514
Ostaszewski, J., 1373
Ostergaard, K., 1289
Osterle, J. F., 790
Osterloh, K., 317
Ostrofsky, B., 459
Oughton, K. D., 56, 69
Overton, H. L., 442
Owens, W. D., 114

Padovani, C., 174, 306, 319, 345, 355, 914, 1325
Paillassa, R., 712
Palchik, E. H., 149
Pallay, I., 179, 207
Palmer, D., 1017
Panchenkov, G. M., 1549
Pankiewicz, B., 35
Paraszczak, W., 1381
Paratella, A., 72, 1291
Pardo, J. P., 1026
Park, A., 401
Parker, W. D., 925
Parkhurst, G. L., 514
Parkyns, N. D., 1449
Paro, F., 1406
Parrish, C. B., 459
Pasqualini, —, 463
Pasternak, R., 1423
Patrick, J. T., 1172
Paul, G., 778
Pauvert, G., 487
Payne, L. C., 56, 69
Pearson, A. J., 435
Pearson, J. W., 1331
Pearson, W. C., 855
Pebalk, V. L., 1554
Pecherskaya, Y. I., 1444
Pedersen, J. A., 127
Pederson, J. N., 22
Pegoraro, M., 308
Penketh, G. E., 1446
Penther, C. J., 313
Peper, C., 1155
Perkins, F. M., 126
Perkins, G., 1434
Perkins, T. D., 910
Perrine, R. L., 947
Perry, L. J., 985
Perry, R. O., 28
Petelle, R., 572
Peters, R. I., 842
Peters, R. L., 685
Peterson, E. E., 898
Petrich, L., 988
Petrov, A. A., 1437
Pettijohn, F. J., 957
Pfefferkorn, H., 138
Pfrehm, R. H., 604
Piazzi, M., 187
Picard, M. D., 1015
Piehl, R. L., 1168, 1193
Pierce, R. L., 1502
Pierot, M., 761
Piguzova, L. I., 1551
Pilcher, D. M., 713
Pilpel, N., 930, 1142, 1435
Pimentel, G. C., 312
Pirson, S. J., 27, 439, 580, 582, 746, 868, 1082, 1262, 1385
Planovskii, A. N., 1112
Please, A., 75
Pletikapic, Z., 110
Plewa, S., 1218
Plotnikov, Y. N., 471
Poettmann, F. H., 1083
Pohl, J., 423
Pohlenz, J. D., 482
Pohoriles, E. M., 603
Poindexter, E. H., 702
Polak, L. S., 1547, 1562, 1563
Poll, J. W., 1336
Pomykala, Z., 1453, 1457
Popescu, F. S., 1307
Porfir'eva, Yu. I., 1437
Porter, K., 1436
Potak, L. S., 1548
Pottier, J., 596
Poitrat, R., 516
Port, G. R., 332
Porteous, W. R., 399
Porter, R. S., 788
Potter, G. J., 52
Potter, P. E., 965
Pottier, J., 1079
Pouille, J., 968
Pounder, J. A., 728–9
Poupon, A., 577, 831
Prange, F. A., 1197
Prats, M., 134
Pratt, G. L., 773
Prausnitz, J. M., 1286
Preidel, J. C., 705
Presting, W., 1154
Preussner, K. R., 1450
Price, N. B., 1495
Price, R. B., 686
Prinzler, H., 1153
Proctor, W. S., 498
Prohaska, B., 196, 296, 1318
Puhovski, B., 1349
Pyrah, A. F., 637

Quant, J. T., 812
Quimby, W. S., 1173, 1187

Raatz, W. A., 908
Rabl, Y., 1295
Raby, C., 493
Radmachen, W., 811
Ragland, D., 946
Ramsay, T. S., 473
Randall, N. P., 201
Rang, S. A., 1344
Raschig, K., 1033
Rascoe, B., Jr, 966
Rasdell, R., 73
Raschupkina, Z. A., 1550
Rasl, A., 356
Rassmuss, J. E., 953
Raviolo, V. G., 337
Ravnic, J., 1414
Records, L. R., 384, 844
Rederon, C., 578, 833
Reed, E. E., 486
Reed, P., 453, 456, 889, 1399
Reeves, C. C., 963
Rehak, J., 1454
Reich, M., 1475
Reidel, J. C., 282, 809–10, 928
Retman, J. A., 237
Reynolds, E. H., 802
Rice, H. L., 993
Rice, T., 294
Richards, H. G., 1358
Richardson, P. D., 1302
Riecke, A., 899
Rigassi, D. A., 819
Riley, E. A., 601, 747
Riley, H. G., 855
Rimmer, A., 503
Ritter, H., 1475
Roach, C. B., 1499
Robb, G. L., 241
Robert, G., 495
Roberts, S., 1521
Roberts, T. G., 128
Roberts, W. L., 679
Robertson, W. G., 670
Robirds, K. D., 481
Robotti, A. C., 350
Roidan, P. G., 100
Rollins, H. M., 1070, 1240
Romovacek, J., 917
Rosenberg, J. C., 654
Rosenbrock, H. H., 1113, 1115
Rosolovskaya, Ye. N., 1529
Ross, L. C., 741
Ross, T. K., 1207
Rossenbeck, M., 651
Rossmoore, H. W., 677
Roth, E. R., 160
Rotha, W., 163
Rotranel, F. A., 1064
Rouse, C., 269
Rousseau, P. E., 298
Rowel, G. M., 626
Rowland, L., 1208
Rowland, L. O., 1092
Rowley, D. S., 842
Rozanova, Z. I., 1324
Rozhdestvenskaya, A. A., 1324

Rubinic, A., 249
Ruche, M., 597
Ruelland, H., 761
Ruf, H., 652
Russell, D. G., 134
Russell, D. K., 941
Rybnikova, A. I., 1536
Rytova, N. M., 1563

Sabins, F. F., 5
Sable, E. G., 1513
Sablina, Z. A., 1323
Sabo, J., 135
Saible, E. A., 789
Sakai, K., 501
Salé, B., 497, 541
Salem, J., 913
Salooja, K. C., 490
Salvi, G., 319
Samsel, J. J., 158
Samuels, A., 742
Sandford, B. V., 1522
Sandford, R. A., 1415
Sande, W. J., 969
Sanin, P. I., 794
Santini, S., 357
Santostasi, M. L., 167
Saracco, G., 1282
Saracini, L., 289
Sartori, A., 290
Sartori, G., 165
Satch, T., 526
Savar, S., 1588
Savin, J. W., 681
Saxton, A. L., 297
Scarborough, W. E., 385
Schillmoller, C. M., 1183, 1191
Schinkel, H., 1131
Schirott, —, 1147
Schisler, A. J., 241
Schmalfeld, P., 1305
Schmidt, G., 1217
Schmidt i Friedberg, P., 111
Schmiedel, R., 1157
Schmitz, R. A., 1304
Schneider, W., 1066, 1157
Schnurmann, R., 321
Schoedler, C., 1445
Schuhknecht, W., 1131
Schultze, W. A., 1348
Schwartz, A. A., 683
Schwartz, C. M., 783
Schwenk, M., 1120
Schwenk, U., 711
Schwenk, W., 918
Schweyer, H. E., 701
Scipioni, A., 291
Scott, D., 79
Scott, G. O., 19
Scott, J., 1230
Scott, J. W., 69
Scott, R. W., 29–30, 415, 420, 1074
Sebestyen, Z., 181
Sedachev, Y. M., 1343
Sedivy, L., 1334
Seeley, de B. K., 1210
Seelis, K. H., 1217
Seguier, P., 998
Seidel, G., 1428
Sejournet, J., 690
Self, M. F., 628
Selman, J., 1176
Serboli, G., 647
Sergeyev, G. B., 1535
Serne, R. W., 315
Sessions, R. E., 856
Seydell, E. M., 1264
Shain, S. A., 1286
Shaknovich, M. I., 806
Shanks, W. M., 1138
Shannon, D. W., 1158–6
Sharayev, O. K., 1544
Shawe, D. R., 975
Shawver, G. L., 388
Shchapov, G. A., 1122
Shekhter, Yu. N., 1162
Shepard, F. P., 982
Sherrod, G. E., 950
Sherwood, P., 217
Sherwood, P. W., 513, 923, 955, 1038, 1121, 1124, 1161, 1163, 1166, 1332, 1345, 1468, 1570
Shields, H., 1189
Shoemaker, E. M., 964
Shokova, E. A., 1530
Shoutz, W. P., 151
Short, N. M., 968
Shrewsbury, J. B., 104
Shtern, E. N., 1159
Shubik, P., 1576
Shulkin, N. I., 1550
Siegfriedt, R. K., 323
Siegrist, H., 1275
Siemek, J., 422
Simin, D., 372, 373
Simon, J., 192, 678
Simon, P., 192
Simons, L. H., 23
Simonsen, R. N., 67
Sirocic, V., 178
Sirola, J., 1461
Sisko, A. W., 693, 696, 697
Six, P., 996
Sjoberg, J. W., 1195
Skinner, E. N., 1586
Slack, H. A., 576
Slagle, K. A., 994
Slaney, S., 1167
Slapnicar, I., 1340
Slattery, D., 738–9
Slaughter, E., 1519
Sliwinski, Z., 379
Slunder, C. J., 1177
Slyngstad, C. E., 286
Slysz, T., 416
Smietana, M., 1330
Smirnov, O. K., 1536
Smith, D. K., 994
Smith, E. A., 666
Smith, J. M., 633
Smith, J. N., 692
Smith, J. W., 1504
Smith, R. H., 36
Smith, R. K., 210
Smith, W. R., 749
Snel, R., 944
Sobolev, B. A., 1288
Sokolov, F. A., 1439
Somazzi, S., 351
Somers, R. R., 679
Sonntag, F., 781
Sorem, S. S., 1028
Sorg, L. V., 1189
Sousselier, Y., 714
Spaght, M. E., 231
Spellmann, R. A., 908
Squires, S., 951
Staats, W., 77
Stabilini, M. P., 64
Stahl, C. D., 1255
Stall, J. C., 389
Stanley, L. T., 410
Stanley, M. E., 1187
Stannett, A. W., 87
Stauffer, H. C., 469
Stearns, R. G., 1503
Stein, N., 1377
Steinbach, K., 1154
Steinhauff, F., 494, 650
Steinhüber, —, 1147
Stell, L. D., 592
Stemberger, V., 1317
Stemen, W. E., 600
Stephens, E. R., 354
Stephenson, R. R., 700
Stern, E. N., 1039
Sterry, G., 754, 820
Stevenson, J. M., 1273
Still, G. R., 1257
Stine, L. O., 482
Stoessel, H., 779
Stoll, P., 1160
Stormont, D. H., 173, 640, 1424, 1460
Strangham, C. F., 1206
Struth, H. J., 1350, 1390
Stuetzer, O. M., 804
Stutz, R. L., 1189
Subbaras, Y. V., 915
Sugden, W., 1496
Swain, F. M., 1491
Swain, P., 262, 825,
Swales, G. L., 895
Swaminathan, V. S., 329, 543
Swan, C. R., 601
Sweeney, W. J., 352
Sweep, E., 1481
Swenson, R. A., 1022
Swift, G. W., 425
Swikert, M. A., 1579
Sylvester-Bradley, P. C., 1356
Symonds, E., 942
Syrkin, A. M., 1439
Szabo, P., 172
Szepesy, L., 180, 192
Szklarczyk, W., 464, 1412
Szokolyi, L., 179
Szostak, L., 1369
Szumanski, J., 1250, 1374
Szynagel, —, 1452

Tabor, D., 305
Tailleur, I. L., 1513
Takisawa, H., 1320
Talamini, G., 1313
Talley, S. K., 1019
Tamaki, A., 511
Taniguchi, H., 1133
Tanimoto, S., 1301
Tarjan, D., 1278
Techo, R., 1284
Tek, M. R., 424
Temme, T., 1032, 1036
Temple, P. G., 985
Tennyson, T. A., 1014
Testerman, J. D., 431
Teterina, M. P., 1563
Teubel, J., 1157
Thackeray, F., 344
Thibault, M., 1573
Thomas, A., 199
Thomas, B. E. A., 1035
Thomas, J. E., 410
Thomas, P. D., 221
Thomeer, J. H. M. A., 266
Thompson, R. B., 1184
Thorn, F. B., 1478
Thralls, H. M., 241
Thrash, P. J., 852
Thring, M. W., 1136
Timonicheva, O. I., 1129
Tipper, C. F. H., 309, 1542
Tisinai, G. F., 1175
Tixier, M. P., 854
Todd, D. B., 1209
Todd, T. W., 1511
Topchiev, A. V., 909, 1531
Topchiev, K. V., 1529
Torraca, G., 186
Tovey, G. R., 689
Traencker, K. C., 517
Treil, A., 770
Treseder, R. P., 1200
Tribble, P. E., 339
Trimble, G. A., 1375
Troscinski, E. S., 1175
Tsentsiper, A. B., 1440, 1556
Tsvervanik, I. P., 1421
Tuhoisky, A. M., 85
Tuliey, S. K., 656
Turriziani, R., 186
Tuyn, M. C., 716
Tyler, C. M., 315

Uhde, A., 1526
Uhl, W. C., 55, 1411

Vago, S. A., 688
Vainshtein, B. P., 1534
Valente, C. A., 1283
Valvassori, A., 165, 296
Vamos, E., 171, 204, 219
van de Venter, J. H., 1093
van der Horst, J. M. A., 1348
van Eck, W. H., 716
van Lingen, N. H., 567
van Middlesworth, N., 874
van Ness, H. C., 627
van Note, C. O., 414
van Vroonhoven, C. E., 1336
van Wijk, W. R., 629, 630
Vellenga, S. J., 142
Vercon, J., 1567
Verink, E. D., 1584
Verret, P., 1566
Versino, C., 502
Viavant, W., 532
Vidotto, G., 1313
Villepelet, J., 618
Vilyanskaya, E. D., 1158
Vincent, R. P., 861
Vitužhina, A. S., 1551
Vives, R., 624
Vlugter, J. C., 168, 901, 1119
Vojnovic, J., 372
Vollmer, L. W., 1205
Volpicelli, G., 1287
von Rosenberg, D. U., 1280
Vossius, V., 94
Vujasinovic, A., 850

Waddoms, L., 91
Wade, R. T., 603
Waeser, B., 801
Wagner, C. R., 233
Wagner, H., 46, 50
Wahl, W. L., 605
Waight, F. H., 1331
Wainerdi, R. E., 1587
Wakao, N., 633
Walas, S. M., 698
Waldie, A. D., 988
Walker, C. T., 1495
Walker, R. G., 876
Walker, R. N., 412
Walls, W. A., 498
Walsh, J. K., 1382
Walter, E., 317
Walther, H., 83, 1467
Ward, R. W., 619
Warren, K. H., 1025
Warren, W. J., 585
Watanabe, I., 465
Waterman, A. T., 232
Waterman, H. I., 168, 1119, 1125, 1309, 1442
Waterman, H. J., 631, 901
Waters, A. B., 1383, 1518
Watson, C. C., 632, 634
Weagant, F. E., 8
Weber, G. H., 228
Weeter, R. F., 1243
Wegner, E. E., 920
Wehner, K., 1428
Weinberg, H. N., 297
Weige, H. J., 430
Wetzel, J. H., 427
Whitaker, W. W., 23, 1000
White, G. W., 1081
White, L. A., 152
White, T. A. B., 544
Widner, G. W., 858
Wiederkehr, R. R. V., 912
Wigley, K. J., 1431
Wilczynski, Z., 14
Wilk, Z., 1249
Wilens, J. F., 1006
Wilkinson, H., 785
Williams, C. W., 1254, 1386, 1479
Williams, F. J., 671
Williams, J. E., 1220
Williams, J. H., 292
Williams, N., 609
Williams, R. W., 343
Willis, J. B., 1417
Willson, D. A., 939
Wilson, A. T., 236
Wilson, C. W., 1503
Wilson, H. M., 752
Wilson, J. F., 860
Wilson, L. E., 24
Wilson, R. W., 777
Wilson, W. W., 435
Wilt, R. L., 292
Wirth, G., 700
Wise, D. V., 1510
Wofford, C. J., 1231
Wojnar, J., 16, 538, 1393, 1488
Wolfe, J. W., 437
Wolsky, A. A., 324
Wolwowicz, R., 1224
Woodruff, C. R., 863
Woods, E. G., 885
Woods, P. H., 1580
Woodward, H. P., 1508
Woodward, L. A., 1501
Wright, C. C., 935
Wright, F., 1505
Wright, J. C., 975
Wright, J. R., 703, 1037
Wright, R. C., 297
Wright, W. F., 3, 9, 238, 366, 367, 1053–4, 1507
Wuellner, J. A., 680
Wulf, G. R., 967
Wunder, J. W. J., 1422
Wunsch, H. L., 684
Wygal, R. J., 1075–6
Wyllie, M. R. J., 130, 586
Wyman, R. E., 573
Wynne Williams, D. E., 305
Wyzlinski, B., 1250

Yata, N., 500
Young, A. P., 783
Youse, E. L., 699

Zaba, J., 587
Zabryanskii, E. I., 1565
Zagar, D., 1456
Zaitova, A. Ya., 1116
Zakar, P., 198, 212
Zakin, J. L., 659
Zapffe, F., 1427
Zechenter, J., 1241
Zhakhovskaya, V. P., 325
Zichner, G., 1150
Ziegler, J. B., 655
Zielinski, J. J., 1302
Zietz, I., 1500
Zinkham, R. E., 571
Zivanovic, Z., 1572
Zlotnicka, J., 428
Zoiendiowski, W., 1476
Zore, O., 1242
Zovotny, Z., 917
Zukrowski, L., 283

ABSTRACT SUBJECT INDEX

Numbers refer to Abstract Numbers

Abercorn, Queensland, 1515
Abu Dhabi, Arab Gulf, 753
Abu Hadriya, Saudi Arabia, 877
Acetaldehyde, for paint, 1468
Acetic acid from aliphatic hydrocarbons, 330
Acetylene:
  chemicals from, 808
  for hydrocarbons, 1425
  from methane, 181, 215, 771
  from natural gas, 173, 1424
  ionization coefficient, 1311
  manufacture, 480
  polymerization, 289
  vinyl acetate from, 1472
Ackman, Nebraska, 977
Adamantan, derivatives, 213
Additives, injection system, 486
Adsorption:
  IsoSiv process, 468, 1285
  molecular sieve processes, 469
Africa, North:
  oil exploration, 754, 1098–9
  See also Algeria, Sahara.
Agriculture, petroleum chemicals in, 1476
Aircraft fuel systems, static electricity, 230
Alaska:
  Cod Inlet well, 120
  Copper River salt waters, 981
  offshore drilling, 386
  oil exploration, 553, 1513, 1524
Alberta:
  Canadian Oil Co's refinery, 1005
  oil exploration, 12
  Snipe Lake, 726
Alcohol:
  butyl, from propylene, 172
  from ethylene, 479, 906
  high molecular weight, 479
  synthesis from hydrocarbons, 176
Aldehydes:
  for paint, 1468
  hydrogenation, 1534
Alfol process, 479, 906
Algeria:
  gas exploration, 1270
  Hassi R'Mel oilfield, 263, 761, 1270
  oil exploration, 263
  pipeline needs, 617
  Rhourde-el-Baguel field, 617
  See also Sahara.
Aliphatic acids, synthesis from hydrocarbons, 176
Aliphatic hydrocarbons, equilibrium calculations, 630
Alkanes:
  cracking, 1543
  heat of mixing, 1432
Alkylbenzenes, conversion to dicyclic components, 1309
Alkyd resins, 923
Alkylation:
  feed superdrying, 900
  use of chromatography, 292
Alloys:
  corrosion resistant, 1577
  for refinery plant, 1175
  nickel, corrosion, 814, 1577
Aluminium, condenser tubes, 147
Aluminium soaps, 1142
Anthracene:
  estimation, 646
Anthracene (*contd.*):
  hydrogenation, 1294
Arab Gulf, Khor-al-Amaya terminal, 144, 1396
Arabia, structural geology, 1496
Arctic:
  oil exploration, 1091, 1268
  seismic exploration, 15
Argentina:
  La Sara field, 40
  Lujan de Cuyo refinery, 61
  oil imports and production, 93
  oil production practices, 36
  refinery developments, 98
Arizona:
  Navajo field, 1213
  oil exploration, 610
Arkansas:
  Arkoma Basin geology, 241
  Desha test, 547
  oil exploration, 757
  Washburn anticline geology, 7
Arkoma Basin, geology, 241
Aromatic fracture, sulphur compounds, 1324
Aromatics:
  adsorption power, 1320
  alkylation, 1549
  polynuclear, pyrolysis, 1475
  Rotterdam plant, 931
  synthesis, 491
Ash:
  fuel, potassium and sodium estimation, 1131
  fuel oil, corrosion by, 1017, 1177, 1204
Asphalt:
  blown, oxidation, 1037
  coatings, testing, 1346
  colloidal theory, 1310
  paper sacks for, 1466
  roofing, weathering, 1465
  resonance and relaxation, 702
  road use, 798
  roofing, durability, 703
  See also Bitumen.
Asphalt resins, blowing effect, 1153
Asphaltenes, vanadium in, 324
Asphalto, California, 1056
Athabasca tar sands, exploitation, 441, 611, 1092
Australia:
  Cabawin field, 733
  Moonie, 13, 50, 369
  Mornie–Brisbane pipeline, 50
  oil exploration, 13, 555, 713, 1098, 1515
  Sunnybank field, 734
Austria, Schwechat petrochemical plant, 932
Autofining process, 902, 907
Aviation fuel:
  cleanliness problems, 450
  properties of, 496, 715
  thermal stability, 1135
  turbine, 201
    insoluble deposits, 1327
    petroleum based, 497
    properties, 652
    refining, 1428
  types, 715

Banat, Yugoslavia, 372–3
BASF cracking process, 1419
Bearings:
  air-lubricated, 684
  PTFE-lined, lubrication, 658
Becerro, Mexico, 42
Beluga River, Alaska, 553
Benelux, liquid petroleum gas use, 784
Benzene:
  adsorption by zeolites, 1443
  alkylation, 1421
  chromatographic analysis, 917
  conversion to biphenyl, 1442
  conversion to dicyclic components, 1309
  nitration, electrochemical, 488
  pure, 924
  recovery, chromatographic control, 381
  recovery from coke-oven gas, 169
  refining developments, 477
  sulphuric acid refining, 1475
Benzole, benzene determination, 1449
Beynes, France, gas storage underground, 1102
Big Island, Louisiana, 139, 609
Bitumen:
  aging stability, 796
  binding properties, 801
  blown:
    manufacture, 800
    weather resistance test, 799
  cementing of layers, 795
  composition and properties, 701
  effect on PVC foil, 82
  Haftkleber properties, 795
  Hubbard–Field test, 797
  Hveem test, 797
  Marshall test, 797
  mechanical testing, 797
  penetration–viscosity relationship, 922
  road use, 507
    USSR requirements, 1148
  rubber addition effect, 83
  runways, 1149
  Russian, 212
  spreading characteristics, 75
  TV-bit test, 797
  See also Asphalt.
Bitumen–cement–mineral floors, 1146
Bituminous binders, changes in use, 700
Bituminous emulsions:
  cation active testing, 1034
  road application, 84
Bituminous fillers, spectroscopic evaluation, 1151
Bituminous mixtures Trinidad-asphalt, 1147
Blairsfield, Pennsylvania, 722
Blue Water offshore drilling rig, 396, 838
Bochnia, Poland, 1363
Boilers:
  marine, fireside deposits, 498
  oil-fired, canister, 1138
Borehole TV, 17
Borg al Arab, Egypt, 606
Boscan asphaltenes, vanadium in, 324
Brazil, oil exploration, 876
Brines, oilfield, barium determination, 1258
Britain:
  Canvey–Leeds gas pipeline, 53
  Coryton refinery, 769
  Ellesmere Port terminal, 1398
  gas storage underground, 884
  Kent refinery ethylene plant, 1471

Britain (*contd.*):
liquified natural gas, 760, 763
Llandarcy refinery, 625
marketing pattern, 525
offshore exploration, 736, 880, 1110
petroleum chemicals, 512
pipelines, 145, 887–9
Purfleet terminal, 143, 762
Severnside petrochemical plant, 512
Sunderland depot, 882
British Columbia:
Fraser River delta, 982
gas exploration, 1093
Brunei, oil exploration, 1269
Brzesk Nowy, Poland, 1363
Bubbly oil, viscosity, 1144
Burners, fuel oil, noise causes, 356
Butadiene:
cis 1,4 poly-, thermodynamic properties, 304
from monovinylacetylene, 899
Butamer refining process, 58
Butane:
for aluminium processing, 1459
viscosity equation, 1010
n-Butenes, oxidation, 1436

Cable oils, analysis, 509
Cabawin, Australia, 733
California:
Asphalto field, 1056
Grimes field, 8
hydrocarbons in sediments, 979
oil exploration, 751, 873
Poso Creek, 433
sediments, deposition rates, 980
Wayside Canyon, 368
Cammarata, Sicily, 11
Canada:
Acheson, pressure maintenance, 1245
drilling statistics, 385, 839, 851, 1522
exploration costs, 613
gas-processing plants, 461
Hudson Bay, 107
natural gas exchange with U.S.A., 495
oil exploration, 103, 755, 1094–5, 1523
oil industry, 96, 1208
Pembina gas conservation, 1266
tar sands exploitation, 441, 611, 1092
See also various provinces.
Candelaria, Mexico, 42
Carbon black:
European production, 705, 809
manufacture, 810, 928, 1338, 1340
Yugoslavia production, 218, 328
Carbon rings, hydrogenolysis, 1123
Carboxylates, solubility in hydrocarbons, 774
Carburettors, vapourless factors, 340
Careers in oil, research and development, 947
Catalysis, mass transfer, 1292–3
Catalysts:
alumino-silicate, acidity, 1529
chemical reactions, 898
Durabead 5, 474, 897, 1007
ethylene polymerization, 1444
iron, activation effect, 164
isothermal selectivity, 636
metal organic compounds, 911
pellet:
diffusion in, 633
mass transfer on regeneration, 632
porous, diffusion in, 1291
radiation-thermal, 1531
reforming, 288
regeneration, air consumption, 1116
temperature profiles on regeneration, 634
Catalysts (*contd.*):
thermal instability, 1289
unreduced iron, chromatographic investigation, 919
zeolites, properties, 1551
Ceramic kilns, oil firing, 1137
Chemical reactions, phenomena in, 642
Chemical systems, multi-component, thermodynamic properties, 912
China, oil economy, 943
Chile, oil industry, 953
Chittagong, Pakistan, 140
Chinshui, Taiwan, 1360
Chlorine, manufacture, 812
Chromatography:
analysis of C_1–C_4 hydrocarbons, 776
benzene, 917
benzene recovery control, 781
coal products, 782
coal tar pitch, 916
developments, 188
for well profiles, 1226
fractionation data analysis, 1313
gas, 1316
safety measures, 711
gas analysis, 492
Hamburg symposium, 314
industrial applications, 1445
ionization detectors, 918
liquid phase, 194
liquid phase for wax analysis, 1155
liquid sampling valve, 313
refining problems solution, 1429
separation of octane isomers, 780
stationary phase, alumina, 920
trace estimations, 1120, 1134
use in exploration, 546
use in alkylation unit, 292
versatility of, 192
Chubut, Argentina, 36
Chuhuang Keng, Taiwan, 1360
Chutouchi, Taiwan, 1360
Chutung, Taiwan, 1360
Cieszyn-Bielsko, Poland, 1365
Claus process, 66
Clearville, Ontario, 105
Cloud point, wax effect, 1140
Coal:
alkylation, 1475
aromatic-ring systems in, 1319
degasification, 517
oxidation, 811
Coal products, chromatographic analysis, 782
Coal tar pitch, chromatographic analysis, 916
Cobalt carbonyls:
reaction with sulphur, 184
structural properties, 193
Cod Inlet, Alaska, 120
Colombia:
oil exploration, 875, 1388
Provincia, 125
Provincia–Payoa field, 1216
tectonics, 984
Colorado:
Entrada sandstone, 975
Green River oil shales, 1504
Laramide uplift, 973
oil exploration, 549, 727, 749
Paradox Basin, 964
Pennsylvania and Peruvian rocks, 966
Salt Valley–Cisco area, 990
San Juan Basin, 1087
Combustion:
fuel droplets, 1136
fuel oil, unburnt chemicals, 1152
ion formation measurement, 1434
ion recombination in flames, 653
Comecon, power requirements, 1480
COMLOG computer for drilling logs, 576
Compressor stations, electrical safety, 937
Computer use:
absorption calculations, 483
casing design, 1071
depletion drill calculations, 439, 580, 582, 746, 868, 1262, 1385
dipmeter logs, 390
distillation calculations, 1283–4
distillation unit control, 71
drilling, 575–6
equilibrium calculations, 630
Japan's oil industry, 1485
oil exploration, 1212
oilfield operation, 433, 600
production data, 592
project control, 1539
refining control, 641, 908
tanker allocation, 1484
two-phase flow, 132
water drive prediction, 590
Cornwallis Island, 1268
Corrosion:
aluminium alloys, 1580
anti-corrosion greases, 219
automobile fluids, 709
bacterial, 829, 935
by high temperature H_2S, 1195
catalytic reformer tubes, 708
cathodic protection, generators, 1478
chemical engineering and, 1207
corrosion-resistant alloys, 1577
detection inside pipe, 936
distillation unit, 332, 1168
drilling plant, 1171, 1174, 1185–6
fluid coking unit, 333
fuel oil ash, 1017, 1177, 1204
heat-resistant alloys, 335
inhibitors in refinery streams, 221
iron, by H_2S, reaction velocity, 1578
lubricant additives, 792
measurement, 1172
microbiological, 710
nickel alloys, 814
oil-filled heating plant, 331, 1138
pipelines, 518, 925, 1173, 1193–4
production plant, 519, 1181–2, 1196–7, 1202, 1205
refinery, use of probes, 220
refinery plant, 1168–70, 1172, 1183, 1188–92, 1198, 1582–4, 1586
resistance to laboratory tests, 334
service station equipment, 1581
steel:
by fuel oil, 1180
by hydrogen sulphide, 90, 1205
sulphide corrosion cracking, 1199–200
storage tank vents, 1201
tankers, 1173, 1178–9, 1187
tubular goods, 1585
well casing, 402, 816
Cracking:
BASF process, 1419
catalysts. *See* Catalysts.
catalytic, metal contaminant effect, 287
Demet process, 1415
feed stocks, oxygen removal, 903
fluid catalytic, data collection, 1417
general considerations, 472
Isocracking process, 69
moving bed, 1290
Orthoflow process, 286, 1528
Otto-tube, catalyst activity determination, 163
reactor, fixed-bed, 635
Rotomotor control, 1528
Lurgi–Ruhrgas–Sandcracker, 1305

Crisol, Mexico, 42
Cristoles, Cuba, 730
Crude oil:
  analysis of, 1315
  BS & W measurement, 585
  demulsification, 26, 417, 440, 494, 650, 1307
  desulphurization, catalytic, 168
  Kuibyshevo, solid hydrocarbons from, 1455
  Nagylengyel, Hungary, 198
  origin. *See* Petroleum.
  paraffin content, urea analysis, 196
  Sataran, 199
  See also Petroleum.
Cuba, oil exploration, 730
Cutting oil:
  deterioration, coliform bacteria effect, 677
  multi-purpose, 78

Daanbantayan, 1389
Dahra-Hofra, Libya, 732
Dakota:
  Englewood formation, 976
  Newcastle sandstone, 967
*cyclo*Decane, catalytic conversion, 1530
Demet cracking process, 1415
Depots, lighting, 52
Demulsification:
  crude oil, 494, 650, 1307
  surface-active materials for, 1307
Detergents, classification, 185
Detonation, reaction in engine, 1326
Dienes:
  dehydrocyclization, 1550
  nuclear magnetic resonance, 1437
Diesel exhaust smoke, 1016
Diesel fuel:
  additives, 1574
  bacterial fouling, 1460
  combustion promoters, 490
  residual, wear theory, 336
  resin and lacquer formation, 1323
  sludge gas, 320
  smoke measurement, 1012, 1128
  use of cracked distillates, 1461
Diesel oil. *See* Lubricants.
Dimethylterephthalate:
  esterification with ethylene glycol, 186
  from *p*-xylene, 929
Discovery offshore rig, 1516
Distillation:
  automatic analysers, 284
  columns:
    calculations, 1111
    control, 1115
    high efficiency, 467
    historical review, 1113
    packing efficiencies, 285
    performance, computer analysis, 1283
    performance data, 1114
    start-up and shut-down, 156, 161
  equilibrium data calculation, 629–30
    thermodynamic consistency, 1284
  extractor, 1282
  fractionation, reflux ratio calculations, 627
  furnace tubes, corrosion, 332
  jet tray, uniflow, 1110
  laboratory, 1318
    ASTM methods compared, 1013
  fraction collector, 1314
    modern design, 190
  liquid mixing effect, 628
  mass transfer study, 1112
  mixtures, polynomial determination, 1280

Distillation (*contd.*):
  technology trends, 1109
  trays, double-overflow, 1281
  unit control by computer, 71
  units, corrosion, 1168
  vapour–liquid equilibria calculations, 627
Dixajpur, Pakistan, 140
Dodecanes:
  isomeric, spectra, 1562–3
  γ-radiolysis, 1547
Domestic heating:
  aerosols and air pollution, 346
  apparatus and techniques, 345, 347, 351
  boiler characteristics, 357
Doonbeg, Eire, 557
Drilling:
  achievements, 1067
  acidizing, swellable polymers, 570
  air, 1375
    large cutting recovery, 23
  air–gas, 575, 1221, 1377
    foaming agent testing, 993
    flow dynamics, 1220
    large hole, 1239
  blowout prevention, 743
  cable tool *v* rotary, 19
  cementing, 1241
    factors affecting, 847–8
    radio-isotope use, 257
    salt cement, 994
  contract, 382–3
  coring, turbo, 572
  crooked hole problems, 742
  damaged wells, repair or re-drill, 835–6
  deep, 830
    costs, 254
    wells, 1090, 1230
  diamond, 741
  directional, 116, 251, 1072, 1231
    costs, 116, 251
    turbo-drill use, 409, 566, 837
  drainhole, 1072
  electrofrac technique, 575
  fishing, damage by, 578
  formation cracking control, 1374
  formation testing, 399–400
  high reservoir pressure, 266
  high-pressure gas reservoirs, 569
  hydraulic-ram, 1373
  logging:
    acoustic, 579
    automatic digitizing, 418
    cement bond, 848
    directional, 1227
    electrical, 381
    electronic recording, 832
    gamma–gamma, 577
    magnetic tape computation, 390
    neutron-density logs, 831
    nuclear magnetic, 564, 573
    porosity, 577
    lost circulation, 21, 1232
    additive evaluation, 849
    combatting, 833
    prevention, 743
  offshore, 18, 117, 396–7
  penetration rate, 567
  percussion/air system, 394
  personnel, 383
  pipe running, surge pressures, 24
  planning and costs, 574
  rock hardness classification, 1068
  rotary, perfect cleaning theory, 568
  rotary *v* cable, 19
  speed record, 1229
  speeding-up devices, 575
  straight-hole, 1070, 1240
  stuck pipe, freeing, 389

Drilling (*contd.*):
  turbo drilling, 395, 407, 409, 1242, 1369
  well data recording, 992
  well profiles, 1226
  world activity, 41, 1096, 1098
Drilling equipment:
  barge, 1234
  bits:
    diamond, 22, 387, 842
    Russian, 408
  blowout control, 844
  borehole TV, 17, 253
  casing:
    burst resistance, 571
    computer design, 1070
    corrosion protection, 816
    repair liner, 861
    sizes in use, 1517
    strength calculation, 1381
  cement, 403–4, 406
    anti-friction additive, 118
    gel, 1241
    permeabilities, 432
    corrosion inhibitor, 1171, 1174, 1185–6
  developments, 382, 398
  drill collars, square, 388
  Drillmobile, 575
  electrical, 1223
    gas turbines, 575
  formation tester, 399–400
  Hammderdrill, 575
  hydraulic system, 1376
  log, chart digitizer, 418
  offshore, 396–7, 1237
    Blue Water rig, 396, 838
    Discoverer rig, 1516
    floating rigs, 122
    Ocean Driller rig, 1516
    Western Offshore II, 386
  perforator, 561
  percussion/air system, 394
  power station, central, 1222
  rigs:
    design improvements, 560
    diesel-electric, 393
    German, 850
    portable, 1069, 1073, 1233, 1235
    submersible, 250, 252, 744
    U.S.S.R., 559
  rotary, wire rope maintenance, 20
  sampler, explosive, 1211
  shock absorber, 562
  slush pumps, U.S.S.R. Y8-3, 558
  tongs:
    air-powered, 1238
    hydraulic power, 575
  tool joints, 1224
    fatigue strength, 391
  turbo, 566
  underwater device, 563, 565, 834, 1247
  well data recorder, 992
Drilling fluid:
  anti-corrosion additive, 402
  effect on cores, 405
  gas-based muds, 1225
  ionic exchange, 123
  loss control, 21
  surfactant additive, 401
Drillmobile servicing unit, 575
Durabead 5 catalyst, 474, 897, 1007
Dutral, properties, 327

Eastern Hemisphere, oil industry, 820
ECAFE, oil exploration, 1269
Economics:
  capital expenditure optimization, 536
  oil production, 1350

Ecuador, oil industry, 953
Edjele, Algeria, 263
Education, responsibility, 1043
Egypt, oil exploration, 606
Eire, oil exploration, 370, 557
Electricity, cost reduction, 1273
Electricity needs of petroleum industry, 1006
Electrode pitch, 1035
Electrofrac treatment of reservoirs, 575, 581
Elk Basin, Wyoming, 364
Emulsifier, 1162
Emulsions, crude oil, breaking, 26, 417, 440, 494, 650, 1307
Energy, demand estimation, 720
Engines:
  automobile:
    corrosion by fluids, 709
    developments, 337
    exhaust afterburners, 338
    future, 222
  cam and tappet wear, 506
  carburettor icing, 651
  compression-ignition:
    dual fuel, 224
    lubrication, 791
    wear by residual fuels, 336
    wear loss studies, 686
  corrosion, electrochemical, 1348
  gas, nitrogen fixation level, 1041
  gas turbine, automobile, 223
  liners, wear examination, 783
  marine:
    crankcase explosions, 80
    flame traps, 80
  multi-fuel, 1347
    injection system, 520
  piston movement measurement, 341
  running-in time reduction, 77
Engineers, training, 946
" Escorez " resins, 1571
Esters, hydrogenation, 1534
Ethane:
  conversion in discharge, 1440
  viscosity equation, 1010
Ethiopia, oil exploration, 878
Ethyl fluid, analysis, 1450
Ethylene:
  acetylene estimation, 918
  alcohols from, 479, 906
  conversion in discharge, 1440
  Fawley plant, 68
  from petroleum fractions, 1419
  ionization coefficient, 1311
  Kent refinery plant, 1471
  liquid, transport, 764
  manufacture, 480
  oxidation, catalytic, 162, 293
  plant operation, 1430
  polymerization, 1473, 1535
    induction period, 1544
    nickel-based catalyst, 291
  storage underground, 448
  thermal decomposition, 1441
Ethylene–propylene–butene polymerization, 290
Ethylene–propylene copolymer:
  Dutral, 327
  infra-red analysis, 195
  vulcanization, 303
  iodine thiocyanate action, 493
Europe:
  carbon black production, 218, 328, 705, 809
  Common Market:
    energy in, 228
    refineries, 57
  oil and gas industry, 819
  oil exploration, 1098–9
Europe (*contd.*):
  petroleum chemicals developments, 514, 516
  pipelines, 1103, 1526
  plastics from coal and petroleum, 515
  South European pipeline, 618, 621
  Western:
    oil exploration, 827
    petrochemical industry, 91
See also various countries.
Exploration for oil:
  computer use, 1212
  cost per barrel, 130
  deep sea, 1210
  developments in, 113
  chromatography in, 546
  costs in Canada, 613
  foreign exploration problems, 124
  lateral faulting effect, 1498
  migration, 361
  offshore, 363
  petrofabric studies, 721
  regional geological synthesis, 1490
  statistical approach, 114
  radio method, 738–9
  surface indications, 821, 828
  underground water identification, 392
Extraction, liquid–liquid, 1287
Extractors, disk rotor, mass transfer, 1554

Fadhili, Saudi Arabia, 264
Fatty acid soaps, 930
Fatty acids, thermocatalytic conversion, 1538
Ferdinandovac, Poland, 110
Ferrofining process, 478, 638, 770
Fires, oil, fighting, 938
Fischer–Tropsch synthesis, use in S. Africa, 298
Flow, grannular materials through orifices, 1300
Fluid flow:
  annular, temperature effect, 1297
  gas, in porous strata, 424–5
  in porous media, 996
  non-Newtonian liquids, 1107
  particle precipitation, 1552
  two-phase in vertical tube, 1299
  two-phase in pipes, pressure drop, 896
Formaldehyde, for paint, 1468
Four Corners:
  exploration, 1087
  gas origin, 1015
France:
  chemical industry, 89
  Donges refinery, 463
  Lavera oil industry, 767
  liquefied methane developments, 1566
  Paris basin, 371
    Purbeckian ostracods, 986
  petrochemical industry, 704
  rubber production, 707
Friction:
  measurement, Tapered Spindle Top, 1019
  wear and, 321
Fuel cell, 352, 541, 1355
Fuel oil:
  ash corrosion, 1017, 1177, 1204
  cloud point, wax effect, 1140
  combustion of droplets, 1136
  combustion, unburnt chemicals, 1152
  corrosion of stainless steel, 1180
  fireside deposits in boilers, 498
  use with air heaters, 785
Fuels:
  engine, exhaust characteristics, 339
Fuels (*contd.*):
  gaseous, 174
    science, technique, and chemistry, 914
  heat coefficient, 1129
  hundred years history, 355
  hydrocarbon, combustion promoters, 490
  sulphur estimation, 1132
Furnace, tube, combustion products temperature, 1122

Galicia, bibliography on oil industry, 537
Garzan, Turkey, 985
Gas:
  absorption process, computer use, 483
  chemical dehydrator, 1009
  chromatographic analysis, 1120, 1134
  coke, changes during storage, 269
  coke-oven, benzene recovery, 169
  combustible, ducting, 1044
  hydrogen sulphide removal, 1423, 1427
  impurities removal, 180
  ionization coefficients, 1311
  liquefied, electrical breakdown, 1336
  liquid, transport, 270, 760, 763–4
  processing:
    automatic, 484
    glycol-injection system, 481
    Hypo process, 482
    sampling apparatus, 1453
  stability test, 310
  synthesis; oxygen-pressure process, 318
  town:
    from oil, 319, 1139
    otto CC3P process, 317
    otto-tube cracking process, 163
    oxygen-pressure process, 318
  underground storage, 269, 448, 615, 619, 884–5, 1102, 1397
  viscosity determination, 189
  water removal, 1009
Gas oil:
  catalytic desulphurization, 1119
  hydrocarbon types in, 171
  naphthalene from, 65
  paraffins recovery, 295
  sulphur compounds, 1119
  additives, methyl*cyclo*-pentadienyl manganese tricarbonyl, 177
Gasoline:
  analysis of, 1315
  carburettor vapour losses, 340
  catalytic reformed, 1117
  combustion promoters, 490
  combustion qualities, future, 200
  high-octane components, 1308
  knock testing, electronic, 1565
  lead compounds determination, 649, 1564
  Polish, analysis, 1452
  refining, 1428
  sampling apparatus, 1453
  TEL determination, 778
Gears, speed changing, 883
Gela, Sicily, 111
General Geophysical Co., 16
Geochemistry, soil gases, 828
Geology:
  Arabia, structural, 1496
  boron, palæosalinity, 1495
  Cambrian oil sources, 103, 105
  Cambrian oilfields, 238, 823
  data interpretation, 1047–9
  depth of sedimentary column, 1050
  Ellenburger formation, Mid-Continent, 366–7

Geology (*contd.*):
faulting, lateral, 1498
Guelph–Lockport formation, 728–9
illites, palæosalinity, 1495
Jurassic, organic compounds in, 1491
limestone, stratigraphic analysis, 1492
oil migration, 361
Ordovician limestones, 962
palæogeography, palæocurrents and, 957
palæomagnetic studies, 1493
palæosalinity calculation, 1495
perspective correlation, 1494
petroleum deposits, quartz grains and, 1
river channel search, 104
rock permeability, 996
rock sections, porosity studies, 1046
sediments:
deposition rates, 980
grain-size interpretation, 545
stratigraphic mapping, 1497
well data interpretation, 1047
Geophysical methods:
data analysis, 1061–2, 1064–5
electro-integrator method, 1218
General Geophysical Co., 16
gravity:
interpretation, 1065
reef location, 1063
new methods, 1059
radio-frequency method, 247
seismic, 740, 958
FM field recorder, 988
moveout analyses, 1219
record correction, 737
reflection method, 1217
transcribing system, 378
transducers, 1066
velocity and depth connexion, 379–80
vibroseis method, 989, 1060–1
use in exploration, 115
wave simulation, 1368
world activity, 248
Geothermal exploration, 822
Germany:
drilling problems, 266
energy requirements, 1103
patent regulations, 94
Schwedt refinery, 60
West:
drilling and production, 138
oil demand trend, 344
oil exploration, 137
Giammarco–Vetrocoke process, 470
Glade, Pennsylvania, 37
Graphite, colloidal, as lubricant, 699
Greases, anti-corrosion, 219
Greater Person, Texas, 243
Grimes, California, 8
Grinding, constant, 1020
Gulf HDS process, 294

Haftkleber properties of bitumen, 795
Hammderdrill percussion drill, 575
Hanover, Michigan, 106
Hanson, Kentucky, 1088
Haradh, Saudi Arabia, 1097
Hassi Messaoud, Algeria, 263
Hassi R'Mel, Algeria, 263, 761, 1270
Hawiyah, Saudi Arabia, 1097
Helium, recovery from natural gas, 1105
*cyclo*Heptane, catalytic conversion, 1541
Hermannsberg, Australia, 13
Hexadiene, polymerization, 165
*cyclo*Hexane:
catalytic conversion, 902, 907
production in coal mine, 1582
*cyclo*Hexane (*contd.*):
products, 1164
n-Hexane, dehydrogenation, 471
H-Oil refining process, 62, 146
Hsinying, Taiwan, 1360
Hudson Bay, Canada, 107
Hungary:
drilling, 1370–4
Nagylangyel crude oil, 198
oil exploration, 444, 1361, 1391
Hydraulic fluids:
fire resistant, 673
seal compatibility, 692
viscosity requirements, 777
Hydraulic systems, cavitation damage, 777
Hydrazine, drilling fluid additive, 402
Hydrocarbon synthesis:
chemical gasification, 914
Fischer–Tropsch, 175
kinetics of reaction on ion catalyst, 639
nickel catalysts, 905
Oxo process, 170, 1469
Hydrocarbon systems:
multi-component, thermodynamic properties, 912
saturated chains, attractive forces, 913
Hydrocarbons:
adsorption on cast iron, 489
analysis by chromatography, 776
carcinogenic, 73
combustion reactions, 643
cyclenes, separation from paraffins, 74
electrical breakdown, 1336
gas discharge effect, 1309, 1442
high molecular weight, equation of state, 300
in living matter, 360
oxidation reactions, 643
pyrolysis, 306, 1546
radiolysis, 775, 1547–8
See also hydrocarbon types.
Hydrodesulphurization, Gulf HDS process, 294
Hydrogen sulphide:
in natural gas, 362
sulphur recovery, 66, 214
Hydrogenation:
anthracene, 1294
H-oil process, 62, 146
processes, 1533
Speichim process, 477
Hypro gas process, 482
HyL process, 316

Idd el-Shargi, Qatar, 607
Illinois, oil exploration, 550
Illinois Basin, 965
Imodco tanker loading buoy, 881
India:
petrochemical industry, 1470
pipeline, 1399
Indonesia, oil exploration, 1269
Information services, 944
Insulating oil:
chlorinated, stability, 1040
cleaning, electrohydrodynamic, 804
from naphthenic crude, 807
gassing properties, 802
high-voltage, 805
humidification of used, 1573
inhibition, 647
low-viscosity, 926
See also Transformer oil.
Iowa, Keota dome well, 1214
Iran:
Asmari reservoir, 1078
oil exploration, 1269
Iraq:
Kirkuk–Tripoli pipeline, 47, 48
offshore terminal, 144, 1396
Ireland, oil exploration, 370, 557
Iron ore, reduction by natural gas, 316
Isocracking process, 69
IsoSiv adsorption process, 468, 1285
Isothiazoles from olefins, 88
Isotopes:
use in oil industry, 109
use in well cementing, 257
Italy:
chemical industry, role of American companies, 349
Cortemaggoire refinery, 282
natural gas industry, 1325
petrochemicals industry, 1483
Porto Marghera refinery, 766
Ravenna petrochemical plant, 329

Jangikasgan, U.S.S.R., 556
Japan:
computer use in oil industry, 1485
oil exploration, 443
oil industry, 526, 1352
petrochemical industry, 511
pipeline, 1400
refining developments, 465
Jessore, Pakistan, 140
Jet fuels. *See* Aviation fuels.
Jetties, lighting, 52

Kahta, Turkey, 985, 1057
Kansas:
Cherokee groups geochemistry, 991
Pennsylvanian and Permian rocks, 966
Kapuni, New Zealand, 1353
Kattwinkel process, 1133
Kazakhstan, oil reserves, 447
Kenai, Alaska, 553
Keota, Iowa, 1214
Kentucky, Hanson field, 1088
Kerosine, paraffins recovery, 295
Ken–McGee rig, 54, 714
Ketones, hydrogenation, 1534
Keystone, Texas, 1000
Khafji, Arab Gulf, 262
Khor-al-Amaya, Arab Gulf, 144, 1396
Khulna, Pakistan, 140
Khursaniyah, Saudi Arabia, 826
Kilns, ceramic, oil firing, 1137
Knock rating:
electronic method, 1565
error sources in testing, 197
"Know-how," sale agreement, 544
Krosno Odrzanskie, Poland, 429
Kuwait:
offshore exploration, 245, 731, 824
water supplies, 748, 945

La Sara, Argentina, 40
Lake, Louisiana, 38
Lebanon, U.S.A., 2
Libya:
Dahra–Hofra field, 732
packaged refinery, 281
Raguba field, 756
Zeltan pipeline, 272
Liquid paraffin:
fluorescence, 326
4M26B determination, 1446
Liquefied petroleum gas:
electrical breakdown, 1336
metering, 1272
transport, 270, 760, 763–4
use in Benelux, 784

Loco Hills, New Mexico, 588
Louisiana:
  Big Island, 139
  oil exploration, 38, 609
  Thornwell field, 1499
  Timbalier Bay field, 997
  Weeks Island salt dome, 961
  Winnfield salt dome, 960
Lubricants:
  additives for, 203, 1018, 1328
    corrosion protection, 792
    dialkyldithiophosphate, 1145
    effect on wear, 794
    filter effect, 502
    molybdenum disulphide, 79
    VI improver, 1462
  aircraft, 715, 1331
  aluminium soaps, 1142
  anti-oxidants, organoselenium compounds, 657
  axle, 209
  ball-bearing, 499
  bearing:
    anti-friction, 1028
    high-altitude, 1028
  catalytic refining, 63
  crankcase:
    contamination measurement, 323
    cold cranking characteristics, 655
    engine test conditions effects, 191
    functions, 667
    high-sulphur, 207
    pumpability, 682
  cutting oil. *See* Cutting oil.
  deasphalting, 1288, 1306
  DEF 2101 approvals, 665, 691
  dewaxing:
    laboratory, 1329
    urea, 500
  diesel, examination of used, 1014
  dispersant, military experience, 1569
  engine testing in Poland, 504
  equation of state, 300
  extreme pressure, 1127
  extreme pressure tester, 1024
  four-ball tests, interpretation, 202
  gas turbine, anti-oxidants, 657
  gear, 210
    ADI, GL-4, 205, 206, 208
    viscosity effect, 787
  glass as, 695
  graphite, 699
  grinding coolant, 1020
  lead corrosion test, 1021
  marine diesel, maintenance, 1029
  marine engine, 1031
  metal soap solutions, 1435
  metals determination, 1558–9
  multi-grade, cold-cranking characteristics, 655
  oiliness measurement, 656
  operating conditions effect, 1027
  oxidation, 505
    metals influence, 1463
    phosphorus determination, 1322
  polymethylsiloxane effect, 1568
  pressure–viscosity characteristics, 921
  stability studies, 307
  synthetic, 695, 1118
  testing, bench–road correlation, 1561
  used:
    evaluation, 211, 1014
    particle determination, 1014
  viscosity:
    Reynolds equation, 670
    shear ratio and, 788
  viscosity index improvers, selection scheme, 680
  wire-drawing, molybdenum disulphide addition, 669
Lubricants (*contd.*):
  wire rope, 1332
  zinc dialkyl dithiophosphates characterization, 503
Lubricating grease:
  arylurea thickeners, 1143
  ball-bearing, thickener effect, 683
  chassis, performance test, 1030
  electric motor, viscosity role, 1025
  lithium, black, 689
  lithium–calcium, oil separation, 659
  manufacture, 501, 698
    pilot-scale, 601
  mechanical stability, 204
  radiation-resistant, 687
  railroad journal bearing, 694
  rape seed–lithium, 1026
  soda–lead, 1022
  thickener, bentonite, 1330
  thickener research, 668
  velocity profiles, 693
  viscosity:
    correlation with penetration, 697
    shear rate and temperature, 696
Lubrication:
  additive corrosion protection, 792
  air bearings, 684
  air-cooled two-cycle engines, 681
  airframe bearings, 671
  ASLE letter symbols, 1023
  automatic equipment, 676
  bearing acceleration effect, 789
  bearings:
    instrument, 672
    PTFE-lined, 658
  boundary, ep lubricants role, 1127
  cold rolling strip mills, 679
  diesel engines, 791
  diesel oil dilution, 1334
  elastohydrodynamic, 1126
  filter effect on additives, 502
  gear, 660
    rubber plants, 688
    teeth load capacity, 790
    viscosity effect, 787
  high-temperature, 1579
  industrial uses, 664
  metal cutting, ep lubricants role, 1127
  metal extrusion plant, 1464
  metal processing, 690
  rockets, propellants as, 654, 663
  rubber plants, 688
  scuffing action, 1433
  space vehicles, 793
  spindle couplings, 678
  thin-film, bearing materials effect, 602
  viscosity and friction, 666
Lukasiewicz, Ignacy, 538
Lurgi–Ruhrgas–Sandcracker, 1305
Luzon, Philippines, 1389

Maleic anhydride, alkylation, 1536
Management, production studies, 532
Manifa, Saudi Arabia, 112, 264
Marketing, linear programming, 521
Markova, Siberia, 377
Mass transfer, 1302, 1304, 1554
Masteroter control unit, 1008
Melville Island, Winter Harbour exploration, 1091
Metal organic compounds, industrial uses, 911
Metal soaps, 930, 1435
Metals, austenitic cast iron, 895
Metering, liquid petroleum gas, 1272
Meters:
  orifice, 891
  positive displacement, 454
  turbine, 454
Methane:
  acetylene from, 181, 215, 771
  conversion in discharge, 1440, 1556
  gas discharge reaction, 1125
  ionization coefficient, 1311
  liquefied, transport, 270
  oxidation, 181, 215, 216, 309, 1542
  pyrolysis, kinetics, 1555
  synthesis gas from, 181, 215
  thermal cracking, 475
  viscosity, equation, 1010
  See also Natural gas.
Methane–oxygen, auto-ignition temperature, 182
Methylcyclopentadienyl manganese tricarbonyl, gasoline additive, 177
Methylene chloride–methyl ethyl ketone–water systems, 178
Mesa Chica, Mexico, 42
Mexico:
  oil exploration, 42, 1388
  oil industry, 100
  oil production, 42
  refinery developments, 99
Michigan:
  Hanover field, 106
  oil exploration, 242, 723, 1215
  reef location by gravity, 1063
Middle East:
  offshore operations, 262
  oil exploration, 754, 1099
  petrochemical developments, 1482
  See also various states.
Mier, Mexico, 42
Missouri, Ste Genevieve formation, 968
Mixtures, binary, phase stability, 1286
Mobot underwater drill, 563, 565, 834, 1247
Molex process, 295
Monovinylacetylene, butadiene from, 899
Montan wax, hydrogenation, 1295
Montana:
  Mississippian rocks, 969
  Newcastle sandstone, 967
  oil exploration, 102
  Williston Basin, 240
Moonie, Australia, 13, 50, 369
Morpeth, Ontario, 729
Motor fuel:
  additive to reduce running-in time, 77
  knock-rating test, error sources, 197
  multi-fuel c.i. engine, 224
  neoprene hose for, 510
  See also Gasoline.
Mulch, agricultural, 803, 1335

Nafta, 200 issues, 540
Nagylengyel, Hungary, crude oil, 198
Naphtha, steam reforming, 1418, 1420
Naphthalene, from petroleum, 65, 1121
Naphthenes, blowing effect, 1153
Naphthenic acid soaps, 930
Natural gas:
  absorption, temperature and pressure effect, 1456
  acetylene from, 173, 1424
  analysis of, 1458
  Canvey–Leeds pipeline, 53
  composition and origin, 76
  desulphurization, 1402
  drier design, 1422
  extraction, low-temperature, 1537
  for iron ore reduction, 316
  Four Corners, origin, 1015
  helium recovery, 1105
  hydrogen sulphide in, 362
  liquefaction, 270

Natural gas (*contd.*):
liquefied:
markets for, 760
transport, 270, 760, 763–4
Lubaczow, sulphur compounds, 1457
processing plants, Canada and U.S.A., 461
storage, 270
sulphur recovery, 1426
underground storage, 33, 432
use in steel manufacture, 640
world production, 45
Zechstein, composition of, 76
See also Methane.
Navajo, Arizona, 1213
Nebraska, Ackman field, 977
Neoprene, use for fuel hose, 510
Netherlands:
Europort refinery, 894
gas reserves, 528
Rotterdam aromatics plants, 932
Nevada:
drilling at Mercury site, 1236
Egan range geology, 1501
Sevy dolomite, 974
New Brunswick, oil exploration, 1512
New Mexico:
gas exploration, 725
geology, 5
Loco Hills waterflood, 588
oil exploration, 1267
San Juan Basin, 5, 1087
Simpson formation, 1053–4
Tres Hermanas Mountains, 978
Vacuum field, 39
New York, oil exploration, 2
New Zealand, oil exploration, 1353
Nigeria:
oil exploration, 879
pipeline, 622
*cyclo*Nonane, catalytic conversion, 1530
n-Nonane, dehydrogenation, 471
Norbenzol process, 477
North Sea, oil exploration, 736, 880, 1110
Nowa-Sol, Poland, 1362
Nuclear energy developments, 714
Nucleonic fluid density gauge, 47

Ocean Driller offshore rig, 1516
n-Octenes, isomer separation, 780
Ohio, oil exploration, 823
Oilfield heating plant, corrosion protection, 331
Oilfields:
automatic control, 1382
computer controlled, 433, 600
optimum control, 523
Oil shale evaluation, 934
Oklahoma:
Arkoma Basin geology, 241
Cherokee geochemistry, 991
oil exploration, 6, 757
Oswego trend, 1051
Pennsylvanian and Permian rocks, 966
Silurian and Devonian rocks, 971
Olefins:
from hydrocarbons by cracking, 472
hydrogenation, 1475
isothiazoles from, 88
polymerization, 167
use in OXO synthesis, 170
Onia-Gegi oil–gas process, 1139
Ontario:
oil exploration, 728–9, 823, 1055
oil in Cambrian, 105
Oregon, oil exploration, 244, 1089
Origin of petroleum. *See* Petroleum.
Orthoflow–cracking process, 286
Otto CC3P process, town gas production, 317
Otto-tube cracking process, 163
Oxidation, process and products, 1130
Oxidation inhibitors, efficiency, 179
OXO synthesis process, 170, 1469

Packaging, paper sacks for asphalt, 1466
Paints:
alkyd resins, 923
alkyds, polyhydric alcohols, 1038
formaldehyde and acetaldehyde, 1468
monomers for lattices, 1570
phenolic resins, 1161
Pakistan:
oil and gas industry, 543
oil exploration, 140
Panama, refinery, 59
Paraffin wax:
analysis by chromatography, 1155
aromatics determination, 1448
deposition in wells, 644
developments, 955
from Tartar crudes, 1156
high purity, 1157
low-intensity fluorescence, 1337
microstructure, 1438
polycyclic hydrocarbons in, 1321
thermal stability test, 1154
toxicity, 1576
Paraffins:
adduction process, 1439
blowing effect, 1153
effect on scuffing, 1433
mixed, viscosity prediction, 910
oxidation, 1342–3
pyrolysis, nitric oxide effect, 773
recovery of, 295
separation from cyclenes, 74
substitution in, 1474
thermal decomposition, 631
Paris Basin, France, 371, 986
Pembina, Canada, 1266
Penex refining process, 58
Pennsylvania:
gas exploration, 722
oil exploration, 871
Warren area, 37
n-Pentynes, hydrogenation, 1545
Peroxyacetal nitrite, air pollutant, 354
Perrypoint, Louisiana, 38
Persian Gulf. *See* Arab Gulf.
Peru, oil industry, 953
Petroleum:
migration, 361
vanadium as indicator, 428
origin, 235, 236, 361–2, 956, 1356
hydrocarbons in sediments, 979–80
relation to lunar maria, 236
Petroleum chemicals:
acetylene derivatives, 808
agricultural uses, 1476
Austrian plant, 932
British developments, 512
developments, 358, 1209
effect on refining industry, 280
European developments, 514
for paint industry, 923, 1038, 1468
France, 89, 704
India, 1470
international marketing, 1351
Italy, 1483
Japan developments, 511
pilot plant design, 348
Ravenna plant, 329
Swedish plant, 933
synthetic fibres, 513
West Europe, 91
world survey, 234, 706
Petroleum engineering, 718, 1043
Petroleum fractions, composition, H No test, 310
Petroleum industry:
developments in, 716
earnings and government policies, 949
electricity requirements, 1006
executives of the future, 353
future of, 531
investment qualities of stocks, 948
margins and profits, 941
supply–demand balance, 942
Petroleum properties, evaluation, 522, 950
Petroleum Research Fund, 233
Phenols, lignite-tar, analysis, 1454
Philippines, oil exploration, 1058, 1389
Pipelines:
Alberta–California, 485
automation, 485, 1527
Britain, 53, 145, 887–9
buried, leak control, 1525
coatings:
asphalt, 1203
plastic, 1206
columbium pipe, 456
concrete pipe construction, 1401
condensate recovery by spheres, 51
construction, 1274
corrosion protection, 925, 1173, 1193–4
eastern hemisphere, 758
Europe, 618, 621, 1103, 1526
gas:
booster station, 271
Canvey to Leeds, 53
construction, 455
two-phase flow, 457
India, 1399
inspection, fluoroscopic, 1405
interface detection, 47, 49
Japan, 1400
Kirkuk–Tripoli, 47, 49
Libya, 272
Moonie–Brisbane, 50
Nigeria, 622
offshore, cathodic protection, 518
Poland, 1403
running costs, 1402
static electricity, 229
station costs, 892
submarine, laying, 1106
thin-walled, bending tool, 453
trench padding, foam plastic, 1104
underwater, laying by barge, 452
uniform internal diameter, 458
wax recovery from deposits, 1406
welding, 456, 890
Western hemisphere, 886
Plasticizers, 1163
Plastics:
Carrington laboratory, 951
European developments, 515
manufacture, 1166, 1345
uses, 1167
white oil for, 927
Pointe du Lac, Quebec, 552
Poland:
Ferdinandovac field, 110
gas reserves, 374
geophysical results, 379–80, 1367–8
Mining Congress papers, 1228
mining laws, 81
oil consumption, 527
oil exploration, 14, 375, 429, 1362–6, 1392–3
oil history, 101, 538–9
oil industry, 445–6, 1486–8
pipelines, 1403
Plock refinery, 464, 1412
refining industry, 283

Poland (*contd.*):
Rijeka refinery, 1414
Sudeten foothills geology, 1357
turbo drilling, 1242
Pollution:
air:
carburettor vapours, 340
diesel smoke, 1016
domestic heating systems, 345–6
exhaust gases, 338–9
photochemical products, 354
W. Germany, 765
refinery, control, 157
Polybutadiene, isomerization, 476
Polydienes, use in rubber, 1165
Polymer chains, non-Gaussian character, 1312
Polymerization:
1,5-hexadiene, 165
olefins, 167
oxide catalyst, 909
stereoregulated, 1296
tetrafluoroethylene, 166
Polypropylene, fractionation, 308
Polystyrene, fractionation, 1313
Polytetrafluoroethylene, friction measurements, 305
Pont Dirillo, Sicily, 111
Poso Creek, California, 433
Potwar, Pakistan, 140
Production of gas:
dehydration equipment, 1378, 1380
dewatering wells, 1081
flow, turbulence effect, 424
flow and head calculations, 1387, 1520
flow calculations, 599, 862, 995, 1263
flowmeter, computing, 1251
offshore, measurement, 31
production estimation, 425, 1252
reservoir limit test, 133
sour gas safety measures, 712
unsteady state flow effects, 855
water blocking prevention, 434
well completion and corrosion, 1196
Production of oil:
acidizing, carbon dioxide use, 119
anisotrophy estimation, 436
automation, 591, 745, 1000, 1249, 1382
BS & W measurement, 585
calculations, 422
capillary phenomena, 595–6, 1079
chemical treatment of wells, 1261
Citronelle field practice, 411
cone-shaped reservoirs, 430
cost per barrel, 130
cross flooding, laboratory tests, 1257
cross-flow, 134
damaged zone completion, 414
depletion drive calculations, 439, 580, 582, 746, 868, 1082, 1262, 1385
drill stem testing, 583
Electrofrac treatment, 581
flooding, gas–solvent system, 1002
fracturing, 34, 119, 423, 1001, 1246, 1248, 1253
gas drive, 856, 1077, 1256
gas lift, 32, 135, 256
gas–liquid flow prediction, 1083
gravity drainage, 999
implosion technique, 25
LACT project, 1000
linear programming, 521
logging:
interpretation, 854
nuclear magnetic, 857
radiation profiles, 1250
techniques, 1080
log, mud, interpretation, 589
management studies, 532
Production of oil (*contd.*):
methods, developments, 1074
miscible displacement:
ternary phase diagrams, 1255
research, 126
oil quantity determination, 27
paraffin inhibitor, 1383, 1518
permeability, 996, 1075–6
porosity determination, 1379
prediction by models, 605
pressure build-up, 412
pressure–time curves, 998
production data computation, 592
pumping, gas interference, 1384
reserves:
assessment methods, 583, 614
cost of finding, 108
secondary recovery, 435
sufficiency of, 608
what are they?, 535
reservoirs:
capillary measurements, 595–6
mechanics, 130, 586
model construction, 35
pressure measurements, 597
sand control, filter technique, 413
secondary recovery:
developments, 1074
overburden pressure effect, 437
zonal studies, 431
secondary salt determination, 427
solution gas drive, 128, 421
swabbing, 1259
thermal recovery, 121, 416, 598, 853
two-phase flow, computer use, 132
unlimited–limited entry, 1260
water coning, 426
water flood, 588, 594, 858–60, 1244
bore damage appraisal, 858
conglomerate reservoirs, 747
fluid properties effect, 601
H_2S removal from water, 1243
KMA field, Texas, 438
offshore, 420
permeability problems, 601
prediction, 590
pump sizing, 1519
turbine driven pumps, 1254, 1386, 1479
water conditioning, 869
water tracer, 28
wax deposition in wells, 644, 1518
well completions:
small diameter, 29, 30
underwater, 117
well stimulation methods, 867
Production equipment:
calibrated pipe prover, 604
corrosion, 1181–2, 1196–7, 1202, 1205
dual production tool, 593
emulsion treater, 417
LACT units, 587
meter, oil and water, 419
packers, buckling of, 131
perforator, 603
water-flood, cathodic protection, 519
wax deposition tester, 410
workover unit, 415, 852, 863
Project control, 1539
Propane:
conversion in discharge, 1440
radiolysis, 645
viscosity equation, 1010
Propylene:
butyl alcohols from, 172
conversion in discharge, 1440
oxidation, 217, 1124
polymerization, 1118
Proteins from petroleum, 813
Provincia, Colombia, 125
PVC foil, bitumen effect on, 82
Pyrrole, metal salts of, reaction with allylic halides, 299

Qatar, oil exploration, 607, 753
Quebec, gas exploration, 552
Quenching oil, bench tests on speed, 675

Raguba, Libya, 756
Ragusa, Sicily, 111
Raman, Turkey, 985
Rangeley, Colorado, 727
Reactor, endothermic, gas-fired, 350
Reddell, Louisiana, 38
Refineries:
air pollution control, 765
Argentina, 98
automation, 1407
Canadian Oil Co., Alberta, 1005
Caribbean, 1411
Ciniza, 893
Common Market, 57
Cortemazzoire, Italy, 282
Coryton, 769
cost reduction, 1408
Donges, 463
Europort, 894
Fawley, ethylene plant, 68
fire protection, 1349
Kent, 1471
Lavera, France, 767
Llandarcy, Britain, 625
Lujan de Cuyo, Argentina, 61
Mersin, Turkey, 1410
Mexico, 99
packaged, for Libya, 281
Panama, 59, 466
Plock, Poland, 464, 1412
Porto Manghera, Italy, 766
process safety, 225, 226
Rijeka, Poland, 1414
world, 55
Yugoslavia, 1276–9
Refinery plant:
air-cooled, 1005
alloys for, 1175
automatic control, 1407
blending, integrated, 768
butane isomerization, corrosion, 1191
cast iron for, 895
centrifugal extraction, 1303
cleansing, chemical, 1176
coatings, synthetic, 1192
cohesive material, critical free arch, 1298
columns:
shut-down, 156, 161
start-up, 156
compressors, 274–6
condenser tubes, aluminium, 147
corrosion, 220–1, 334, 1168–70, 1172, 1183, 1188–92, 1198, 1477, 1582–4, 1586
distillation, computer control, 71
electric motors, 954
flare system, 273
fluid cokes, corrosion, 333
freezing point control, 487
heat exchangers:
air-cooled, 1409
historical review, 1113
plate, 277
heater-treater, 623
heaters:
design standardization, 149
tube wall thickness, 150
inspection, 1413
statistical methods, 151
ultrasonic, 459

Refinery plant (*contd.*):
maintenance:
radiographic techniques, 152
metallic surfaces, interaction, 542
operating hazards, 153
piping:
design economics, 154
low temperature, 155
process-monitoring instruments, 311
pumps, 274–6
reactor, stability analysis, 1304
reformer tubes, corrosion, 708
sequential control, 1008
stainless steel use, 148
steam turbines, 274–6
steel:
corrosion phenomena, 335
corrosion resistant, 1333
stream analysers, 70
tubular reactor, catalytic, 64
Refining:
additive injection system, 486
Alfol process, 479, 906
Autofining process, 902, 907
automation, 56, 278, 284
bitumen blowing, 800
blending system, in-line, 768
Butamer process, 58
catalytic, optimization, 72
Claus process for sulphur recovery, 66
combustion control, 462
computer control, 641, 908
data logging, 624
deasphalting, 1288, 1306
decoking, 460
effluent, oil removal, 67
Ferrofining process, 478, 638, 770
fluid coking process, 297
furnace combustion products temperature, 1122
Giammarco–Vetrocoke process, 470
H-oil process, 62, 146
heat exchange, 1122, 1301–2, 1304
Isocracking process, 69
IsoSiv adsorption process, 468, 1285
linear programming, 521
lubricants, catalytic process, 63
Molex process, 295
new process impact, 58
paraffins removal by urea, 296
Penex process, 58
petrochemicals and, 280
planning by computer, 908
pollution control, 157
process water, air oxidation, 904
steam condensation, 1108
trace water measurement, 279
viscosity breaking, 473
waste water disposal, 158–60
xylenes from platformate, 772
See also various processes.
Reflex fractions, desulphurization, 901
Reforming:
catalysts, 288
catalytic, 1308
naphtha, 1418, 1420
Ultraforming process, 1416
Research:
AIP programme, 231
DSIR, industrial value, 1044
investment in, 232
Koninklijke/Shell-Laboratorium, 97, 1486
Petroleum Research Fund, 233
Thornton Research Centre, 97
university role in, 529
Yugoslavia oil industry, 1354
Reserves. *See* Production.
Residues, deasphalting, 1288, 1306
Resin soaps, 930
Resins:
blowing effects, 1153
manufacture, 1166, 1345
Reynolds equation, derivation, 670
Rhourde-el-Baguel, Algeria, 617
Roads:
asphalt, 798
binder-coated stone, 1032
bitumen use, 84, 507, 1036, 1146–50
hot-mixed tar support, 1033
Rocks:
hardness classification, 1068
sedimentary, pore pressure tests, 1489
Rocket fuels as lubricants, 654, 663
Rockets, lubrication, 654, 663–4
Rocks, permeability, 996
Rotomotor control of cracking, 1528
Roumania, oil industry, 95
Rubber, synthetic, 707, 1165
Ruda Lubycka, Poland, 1364
Runways, bituminous construction, 1149
Rusmag, Texas, 601
Russia, tanker fleet, 48
Rybaki, Poland, 1362

Safaniya, Arab Gulf, 262
Safety:
compressor stations, 937
lighting and, 939
refinery:
committee functions, 343
fire protection, 1349
process, 225, 226
role of trainers, 342
sour gas production, 712
Sahara:
crude oils, 199
Spanish, oil exploration, 554
See also Algeria.
Santa Cruz, Argentina, 36
Saudi Arabia:
Abu Hadriya field, 877
Fadhili field, 264
Khursaniyah field, 826
Manifa, 112
offshore operations, 262
oil exploration, 1097
oilfield model studies, 605
water injection, 869
SBA–Kellogg process, 1424
Schöniger flask analysis, 1559
Schwedt refinery, E. Germany, 60
Sediments:
hydrocarbon determination, 1011
pore pressure tests, 1489
Segas oil–gas process, 1139
"Senior" burner, 785
Service station equipment, corrosion protection, 1581
Shale oil tar, paraffin–naphthene fraction, 1344
Shell oil–gas process, 1139
"Shell" Research Ltd, Thornton Research Centre, 97
Siberia:
oil exploration, 377, 447
oil reserves, 447
Sicily, oil exploration, 111
Sludge gas, engine fuel, 320
Snipe Lake, Alberta, 726
SOD lead corrosion test, 1021
Soledad, Mexico, 42
Solvents, 1163
South Africa, Fischer–Tropsch synthesis in, 298
South America, palæogeography, 983
South Dakota, oil exploration, 724
South Denmark, Ontario, 1055

Spectrometry:
infra-red, 195, 1317
mass, identification of sulphur compounds, 301
matrix isolation technique, 312
ultra-violet absorption criteria, 1447
Speichim process, 477
Spindletop, Texas, 752
Static electricity:
aircraft fuel systems, 230
low conductivity liquids, 940, 1042
pipelines, 229, 1540
storage tanks, 1431
tanker loading hazards, 141, 142
Steam, dropwise condensation, 1108
Steam turbine oils, quality assessment, 674, 786
Steel:
hydrogen sulphide corrosion, 90, 359, 1199, 1200
stainless:
corrosion by fuel oil, 1180
use in refinery plant, 148
Storage:
developments in, 449
electrostatic estimation, 1431
gas, underground, 269, 448, 615, 619, 884–5, 1102, 1397
Storage tanks:
corrosion, 1201
design, 449
hydraulic jack construction, 616
insulation, 46
plastic coatings, 451
spheres, safe operation, 268
stress relief, 54
wax recovery from deposits, 1406
Sulphonates, water–oil-soluble, 1162
Sulphur:
determination:
in fuels, 1132
in petroleum, 1557
X-ray methods, 779
recovery from hydrogen sulphide, 66, 214
Sulphur compounds, identification by mass spectrometer, 301
Surface-active agents, classification, 185
Sumatra, oil exploration, 265, 442
Sunnybank, Australia, 734
Surface erosion, particle effect, 815
Swanson River, Alaska, 553
Sweden, petrochemical plant, 933
Switzerland, pipelines, 1275

Taiwan, oil exploration, 1360
Tank farms, lighting, 52
Tankers:
allocation, linear programming, 1484
cargo discharge, 1395
corrosion control, 1173, 1178–9, 1187
design, 1003, 1101
electrostatic hazards, 142
Manhattan, 267
methane, 760
ocean, 1394
offshore loading buoy, 881
rail, electrostatic hazards, 141
review of, 620
road, electrostatic hazards, 141
Russian fleet, 48
world fleet, 759
Tanks, storage. *See* Storage tanks.
Tar acids, investigation of, 915
Tar-epoxy building materials, 1467
Tar oils, saturated hydrocarbons estimation, 1133
Tennessee, Nashville dome, 1503

Terminals:
Ellesmere Port, 1398
Khor-al-Amaya, 144, 1396
Purfleet, 143, 762
Testing:
analysis, 1315
Schöniger flask method, 1559
X-ray fluorescence, 1560, 1564
apparatus construction, 1318
freezing point, continuous determination, 487
process-monitoring, 311, 315
sulphur determination, isotope use, 637
Tetraethyl lead, analysis, 1450
Tetrafluoroethylene, polymerization, 166
Texas:
Allen dome development, 239
coastal plain geology, 959
Eagle Ford Group geology, 1502
East, proration history, 129
Keystone field, 1000
KMA field, water flooding, 438
Midland Basin Permian strata, 963
oil exploration, 872
Pennsylvanian and Permian rocks, 966
Rusmag water flood, 601
Simpson formation, 1053–4
South:
geology, 4
Great Persian area, 243
Spindletop field, 752
Spraberry field, 1244
well deviation record, 843
West:
Cambrian possibilities, 238
geology, 3
oil exploration, 9, 1505, 1507
Vacuum, 364
Texas oil–gas process, 1139
Thermoplastics, uses, 1167
Thornton Research Centre, 97
Thornwell, Louisiana, 1499
Three Rivers, Canada, 1095
Tiguentorine, Algeria, 263
Timbalier Bay, Louisiana, 997
Timber Creek, Wyoming, 1359
Toledo, Cebu, 1389
Toluene, conversion to 1,2-diphenyl ethane, 1442
Transformer oil:
acids in, water-soluble, 325
additives for, 86
analysis, 509
dehydration, molecular sieve, 85
dielectric losses, soaps effect, 1039
effect on cellulose insulation, 806
manufacture, 1572
oxidation resistance tests, 1451
studying characteristics, 307
used, regeneration, 508, 1160, 1575
water measurement, 87
See also Insulating oil; Turbine oil.
Transformers:
gas stability, 1159
water measurement, 87
Transport of liquid gases, 270, 760, 763–4
Trim, Eire, 557
Trinidad, oil exploration, 1388
Turbine oil:
additives for, 86, 1158
dibutyl para-cresol determination, 648
manufacture, 157
See also Transformer oil.
Turkey:
Mersin refinery, 1410
oil exploration, 985, 1057

Ultraforming process, 1416
Umm Shaif, Arab Gulf, 262, 607
United Kingdom. *See* Britain.
United States:
Appalachian Basin, oil exploration, 1506, 1508
deep wells, 1090, 1230
drilling activity, 255, 385, 839–41, 845–6, 1067, 1521
economic models for 1962, 227
engineers and scientists, 717
exploration costs, 750
exploration trends, 750
fuels in, 719–20
gas processing plants, 461
gas storage underground, 33
giant oilfield discoverers, 1265
helium production, 1105
information dissemination, 717
Internal Revenue Service, 530
natural gas exchange with Canada, 495
natural gasoline production, 864
New Jersey oil prospects, 1358, 1509
oil domestic market, 817
oil production, 260, 1264
oil reserves, 258, 865–6, 1084, 1390
paraffin wax production, 955
pipelines, 886
producing wells, 1085
well casing sizes, 1517
See also various states.
Unsaturateds, viscosity data, 1553
Uranium:
oil interest in, 1587
relation to organic substances, 237
Urea adducts:
deparaffination by, 296
formation, 183
use in crude oil analysis, 196
U.S.S.R.:
drilling equipment, 408, 558–9
Ferghana Gulf geology, 1514
gas exploration, 556
gas pipelines, 455
oil economy, 943
oil exploration, 376–7, 447, 735, 987, 1271
oil reserves, 447
Utah:
Entrada sandstone, 975
Palæozoic rocks, 970
Paradox Basin, 966
Salt Valley–Cisco area, 990
Sevy dolomite, 974
Uthmaniyah, Saudi Arabia, 1097

Vacuum, New Mexico, 39, 364
Vanadium:
determination in ash, 187
in asphaltenes, 324
Venezuela:
oil exploration, 612, 874, 1388
petrochemical developments, 1482
tectonics, 984
Vibroseis seismic method, 989, 1060–1
Virginia, Cumberland overthrust, 1500
Viscosity:
bubbly oil, 1144
p–v–t relationship composition effect, 1141
Vojvodina, Yugoslavia, 373
Volgograd, Yugoslavia, 246

Wadi Natrain, Egypt, 606
Walter, Henry, 539
Washington, oil exploration, 16, 266, 55
Water:
trace components estimation, 918
trace, measurement in refinery streams, 279
Wax. *See* Paraffin wax.
Wayside Canyon, California, 368
Wear:
brass on steel, measurement, 818
friction, 321
resistance evaluation, 322
West Virginia, oil exploration, 365
Western Hemisphere, pipelines, 886
Western Offshore II drilling barge, 386
White oil:
gas stability, 1159
uses, 927
Williston Basin, U.S.A., oil exploration, 240, 548, 1086
Winter Harbour, Melville Island, 1091
World:
drilling activity, 41, 1096, 1098
gas reserves, 45
geophysical activities, 248
international marketing, 1351
oil consumption, 527, 952
oil demand, 113, 524
oil exploration, 113, 261
oil production, 44, 136, 259, 870
oil refineries, 55
oil reserves, 43
oil supply and demand, 92
petrochemical survey, 234, 706
tanker fleets, 759
Wyoming:
Big Piney reservoir, 127
Elk Basin, 364
geology, 5, 1510–11
Jurassic and Cretaceous rocks, 972
Laramide uplift, 973
Newcastle sandstone, 967
oil exploration, 823, 1359
Powder River basin, 5, 10

p-Xylene, dimethyl terephthalate from, 929
Xylenes:
from platformate, 772
transport through polyethylene films, 302

Yamachiche, Canada, 1095
Yugoslavia:
carbon black production, 218, 328
gasoline–diesel fuel balance, 1567
natural gas industry, 1341
oil exploration, 372–3
Pano Basin geology, 249
petrochemical industry, 1339
petroleum products standards, 1588
refining industry, 1276–9
research in oil industry, 1354
Volgograd oil fields, 246

Zapotalillo, Mexico, 42
Zarzaitine, Algeria, 263
Zeolites, production and properties, 155

BOOKS REVIEWED

Numbers refer to pages

Asphalt—Science and Technology, E. J. Barth, 111A

ASTM Technical Papers and Reports, 1956–60, Five-Year Index to, 87A

Atmospheric Sampling and Analysis, ASTM Standards on, 196A

Benzene, Toluene, Xylene, and Solvent Naphtha, ASTM Standards on, 195A

Benzol Technology 1961, Review of, 152A

Bituminous Materials for Highway Construction, Waterproofing, and Roofing, ASTM Standards on, 252A

Boues de Forage, Les, 86A

Butane–Propane Gases Handbook, Lynn C. Denny, Lester L. Luxon, and Barbara E. Hall, 149A

Catalysis, New Approaches to the Study of, Paul H. Emmett, 87A

Chemical Analysis—The Working Tools, C. R. N. Strouts, H. N. Wilson, and R. T. Parry-Jones, 86A

Chemical Engineering, Philosophy and Logic of, Howard F. Rase, 56A

Chemicals from Petroleum, A. L. Waddams, 85A

Combustion, Eighth Symposium on, 54A

Engine Test Sequences for Evaluating Automotive Lubricants for API Service M.S., 86A

Fezzan Oriental, Reconnaissance Geologique du, M. Jacqué, 195A

Financing Oil Expansion in the Development Decade, Edward Symonds, 193A

Flat Rolled Products, E. W. Earhart, 236A

Formation Evaluation, Edward J. Lynch, 150A

Formulaire du Foreur, 87A

Fuel, Freedom for, Georg Tugendhat, 192A

Fuel Cells, George J. Young, 192A

Fuel Injection and Controls for Internal Combustion Engines, Paul G. Burman and Frank DeLuca, 85A

Fuels for Jet Propulsion, Chemical Composition and Properties of, Ya M. Paushkin, 56A

Gaseous Fuels, ASTM Standards on, 152A

Gasification and Gas-synthesis Reactions, The Thermodynamics of, N. V. Lavrov, V. V. Korobov, and V. I. Filippova, 217A

Géographie Industrielle. Vol. 1. Les Sources de Energi, Jean Chardonnet, 111A

Geography of Oil, An Economic, P. R. Odell, 234A

Geologic Activity of Micro-organisms, S. I. Kuznetsov, 127A

Geophysics U.S.S.R., Applied, Nicholas Rast, 127A

High Temperature Chemical Physics, The Shock Tube in, A. G. Gaydon and I. R. Hurle, 217A

Huiles pour Moteurs et le Graissage des Moteurs, Alphonse Schilling, 13A, 216A

Hydraulic Fluids, Introduction to, R. E. Hatton, 83A

Ions in Hydrocarbons, Andrew Gemant, 150A

Hydrocarbons, Bibliography on, 87A

Interfacial Phenomena, J. T. Davies and E. K. Rideal, 14A

Lubricating and Allied Oils, Elliott A. Evans, 168A

Mass Transfer Process Calculations, H. Sawistowski and W. Smith, 194A

Mexican National Petroleum Industry—a Case Study in Nationalization, Antonio J. Bermudez, 215A

Middle East Oil, The Price of: an Essay in Political Economy, Wayne A. Leeman, 13A

Natural Gas, The Supply and Price of, M. A. Adelman, 84A

Oil Pipelines and their Significance in the Economics of Transportation, 217A

Organic Functional Group Analysis, F. E. Critchfield, 235A

Persian Gulf in the Twentieth Century, John Marlowe, 148A

Petroleum Chemistry and Refining, Advances in, John J. McKetta, Jr., 152A

Petroleum Dictionary and Products Manual, Illustrated, Petroleum Educational Institute, 112A

Petrology, W. J. Huang, 13A

Polyolefins, A. V. Topchiev and B. A. Krentsel, 84A

Processi di Ossidazione nella Chimica Organic Industriale, 56A

Raffineries-Grappe, Theorie des, J. Riboud, 250A

Resistance des Matériaux des Récipients sous Pression, Gérard Dreyfuss, 168A

Saudi Arabia Kuwait Neutral Zone, Edward H. Brown, 194A

Search for and Exploration of Crude Oil and Natural Gas in the European Area of OECD, 194A

Synthetic Liquid Fuels, Chemistry and Technology of, I. B. Rapoport, 195A

Synthetic Lubricants, Reigh C. Gunderson and Andrew W. Hart, 151A

Technical Market Research—a Bird's Eye View, Roger Williams, Jr., 84A

Technology, Advances in, 83A

Terms used in the Petroleum Industry, Technical Dictionary of, Magdeleine Moureau and Janine Rouge, 236A

Thermodynamic and Transport Properties, Progress in International Research on, Joseph F. Masi and Donald H. Tsai, 151A

Turbine Oil, Symposium on, ASTM, 251A

U.S. Sources of Petroleum and Natural Gas Statistics, Margaret M. Rocq, 217A

Well Log Analysis, Handbook of, Sylvain J. Pirson, 235A

Well Spacing in the Aneth Reservoir, Frank W. Cole, 14A

Zoological Micropalaeontology, Principles of, Vladimir Pokorný, 234A